Teil 1

SERVICE MANUAL

SANYO

COLOUR VIDEO CASSETTE RECORDER

VTC 5400P

V08158

Beta

TABLE OF CONTENTS

I. INTRODUCTION 1
II. CIRCUIT DESCRIPTIONS 1
A. VIDEO CIRCUIT 1
B. SERVO CIRCUIT 10
C. SYSTEM CONTROL CIRCUIT 14
D. AUDIO CIRCUIT 39
E. POWER SUPPLY CIRCUIT 43
III. CIRCUIT BOARD DISASSEMBLY 45
IV. CIRCUIT ADJUSTMENTS 46
A. POWER SUPPLY CIRCUIT 46
B. TUNER CIRCUIT 47
C. SERVO CIRCUIT 51
D. VIDEO CIRCUIT 55
E. AUDIO CIRCUIT 69

Technical Data

General

Reception Standard	CCIR/B, G-PAL
Scanning Method	2 Head Helical Scanning
Tape Speed	18.73 mm/s
Rewind Time	< 6 min. with L-750 cassette
Loading Time	< 4 sec.
Timer	24 Hour or AM/PM 12 Hour Digital Display, 1 Program, 1 Week, EVERY DAY
Dimensions (W x H x D)	48 x 13.5 x 35 cm

Video

Input Voltage	0.5 – 2.0 Vp-p
Input Impedance	75 ohm
Output Voltage	1 Vp-p
Output Impedance	75 ohm
Signal to Noise Ratio	⩾ 42 dB
Colour Resolution	> 270 lines
B/W Resolution	> 300 lines

Audio

Input Voltage:	MIC	–60 dBm (0.7 mV)
	Tuner	–10 dBm (250 mV)
	Camera	–10 dBm (250 mV)
Output Voltage		–5 dBm (450 mV)
Output Impedance		⩾ 10 kohm
Signal to Noise Ratio		⩾ 40 dB
Frequency Response		50 Hz – 10,000 Hz

Tuner

	CTV system	Channel		RF converter (Adjusted Ch)	Power Source
		UHF	VHF		
EUROPE	PAL I, BG	21-69	2-4 5-12	30-39 (36)	220V 50Hz
EUROPE S BAND	PAL BG	21-69	2-4,X,Y,Z S1, S2 S3-S19,5-12	30-39 (36)	220V 50Hz
UK	PAL I	21-69	–	30-39 (36)	240V 50Hz
HONG KONG	PAL I	21-69	–	30-39 (36)	200V 50Hz
AUSTRALIA	PAL BG	21-65	0-5 5A-11	3-4	240V 50Hz
SOUTH AFRICA	PAL I	21-69	4-13	30-39 (36)	220/240V 50Hz
NEW ZEALAND	PAL BG	21-65	0-5 5A-11	2-3	240V 50Hz
INDONESIA	PAL B	21-69	1-3 4-9	2-3	110/220V 50Hz

I. INTRODUCTION

Using the previous model as a base, a search function and a still function have been added to this model to meet the demands of the consumer.

1. Mechanism

This model employs the mechanism from the previous model, which realizes lighter weight, slim design, and improved operation. Basically, it has not changed at all so its description will be omitted from this service manual.

2. Circuits

The IC's, etc. which the servo circuit, system control circuit, audio circuit, power supply circuit, etc. are centered around; and the other principal features of these circuits are the same as in the previous model, so only their changes and differences will be explained here. Furthermore, the system control circuit has been explained from a different point of view, and we hope that it will be of use to you.

The video circuit is composed of newly developed IC's, but they do not differ greatly from those in the previous model and therefore the old manual can be used.

The tuner circuit and timer circuit are the same as the previous model so their explanations will be omitted here.

II. CIRCUIT DESCRIPTION

A. VIDEO CIRCUIT

The video system is composed of the following circuit boards:

- VP-1: recording amplifier, preamplifier
- VD-1: luminance system
- VD-2: color system

1. Function of the VP-1 Circuit Board

This circuit includes a recording amplifier to supply the Y-FM signal and low-frequency converted chrominance signal to the video head and a preamplifier to amplify the extremely low level Y-FM signal and low-frequency converted chrominance signal, which are played back from the video head, to a fixed level.

The VP-1 also contains a drop-out compensator circuit. These are contained in a sealed case to eliminate interference from the outside.

The primary stage utilizes FET's and is equipped with the new LA7007IC.

2. Function of the VD-1 Circuit Board.

This circuit contains a record/playback system for the luminance signal. The luminance component of the input video signal is converted to an FM signal in the newly developed LA7020IC. The preemphasis, nonlinear-emphasis, and W/D-clipper circuits are all included in the LA7020. Furthermore, besides a sync AGC the LA7020 also has a peak AGC so that you can record without overmodulation of a signal with a lot of shorts or signal shrinkage resulting from live broadcasts from the broadcast station. The playback system demodulates the FM signal to the original video signal by the new LA7025IC. The playback system also utilizes an LA7013 and an LA7019 which make up the y-comb filter noise canceler and the noise-bar reduction circuit for playback variations. The linear de-emphasis circuit, aperture correction circuit, clamping circuit, white clipper circuit, sync separator circuit, etc. are all contained in the LA7025, substantially reducing the number of parts contained in previous models.

These functions and signal flows are shown in Fig. 2-1-1 ~ Fig. 2-1-2.

3. Function of the VD-2 Circuit Board

This circuit contains a record/playback system for the colour signal.

The colour system is composed of the new M51437P, M51438P, M50180P, and M51439P IC's and has the following features.

a. APC-ID system

Until now, playback utilized both an AFC loop and an APC loop, but this model has only an APC loop to compensate for color phase jitter. Accordingly, the former VXO is not used. This speeds the response of the APC and greatly improves phase distortion at the head switching point.

b. Synchronous detection ACC and ACK system

Synchronous detection type ACC and ACK are used. This makes for a low noise system.

c. Double APC system (D-APC system)

The ACC loop and the APC loop each have one APC loop. This makes it so that there is no decrease in saturation in playback variations even if the pilot burst from soft tape is out of phase.

d. Double switching colour sequence correction system

During playback variations, the colour burst produced inside the VTR is inserted.

In colour sequence detection, a signal with a sequence opposite of the insertion phase is utilized, making a stable colour correction circuit.

The former pilot burst insertion and cleaning circuits have been put into an IC, decreasing the number of parts.

The test signal generating circuit utilizes a ceramic resonator, and therefore, it is a stable unit not needing adjustment.

These block diagrams and signal flows are shown in Fig. 2-1-3 ~ Fig. 2-1-9.

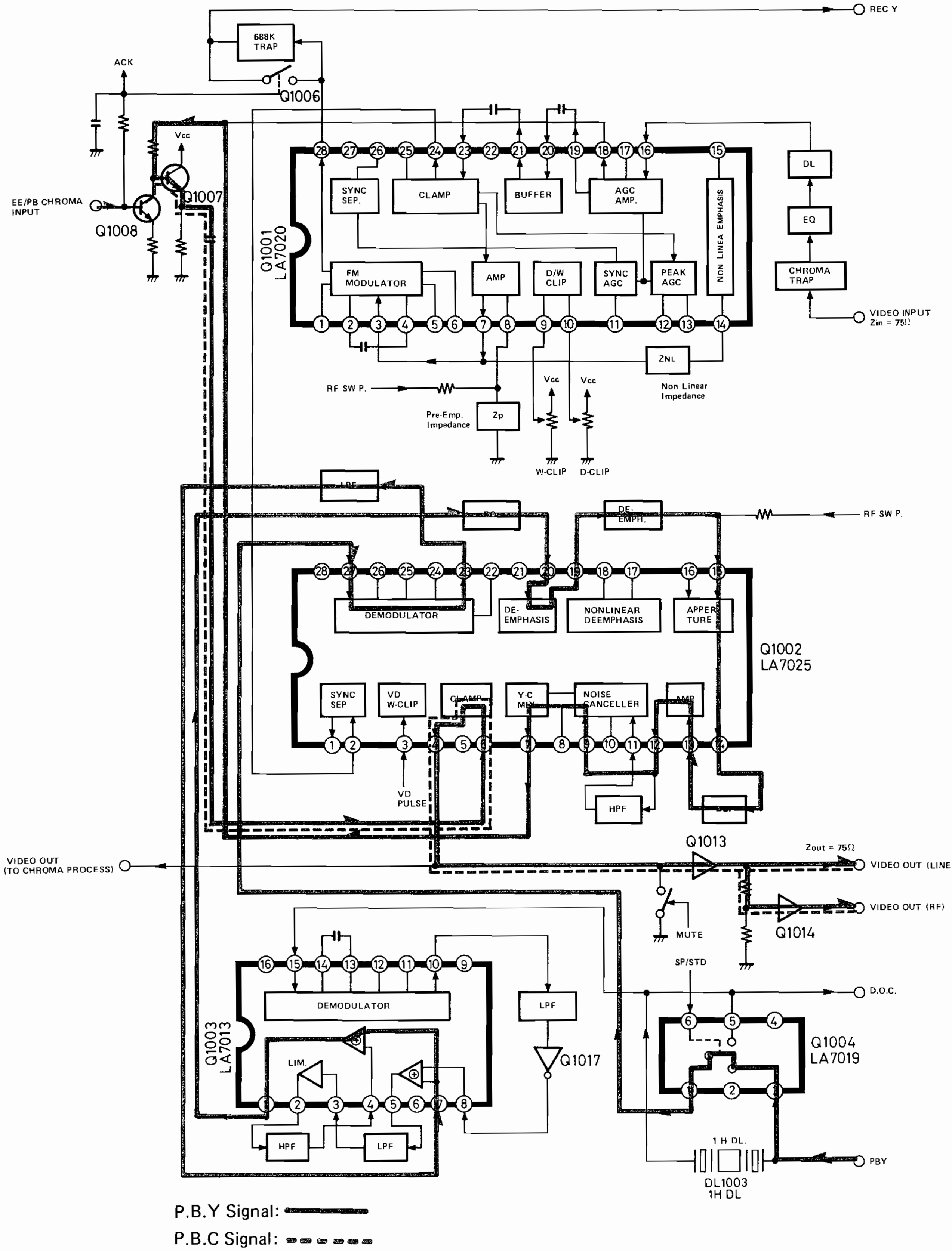

REC Y
688K TRAP
ACK
Q1006
Vcc
EE/PB CHROMA INPUT
Q1008
Q1007
Q1001 LA7020
SYNC SEP.
CLAMP
BUFFER
AGC AMP.
NON LINEA EMPHASIS
DL
EQ
CHROMA TRAP
VIDEO INPUT Zin = 75Ω
FM MODULATOR
AMP
D/W CLIP
SYNC AGC
PEAK AGC
ZNL
Non Linear Impedance
RF SW P.
Pre-Emp. Impedance
Zp
Vcc
Vcc
W-CLIP
D-CLIP
LPF
DE-EMPH.
RF SW P.
DEMODULATOR
DE-EMPHASIS
NONLINEAR DEEMPHASIS
APPER TURE
Q1002 LA7025
SYNC SEP
VD W-CLIP
CLAMP
Y-C MIX
NOISE CANCELLER
AMP
VD PULSE
HPF
Q1013
Zout = 75Ω
VIDEO OUT (TO CHROMA PROCESS)
VIDEO OUT (LINE)
VIDEO OUT (RF)
MUTE
Q1014
SP/STD
D.O.C.
Q1003 LA7013
DEMODULATOR
LIM.
HPF
LPF
LPF
Q1017
Q1004 LA7019
1 H DL.
DL1003 1H DL
PBY
P.B.Y Signal:
P.B.C Signal:

Fig. 2-1-1 Luminance process (VD-1, P.B mode)

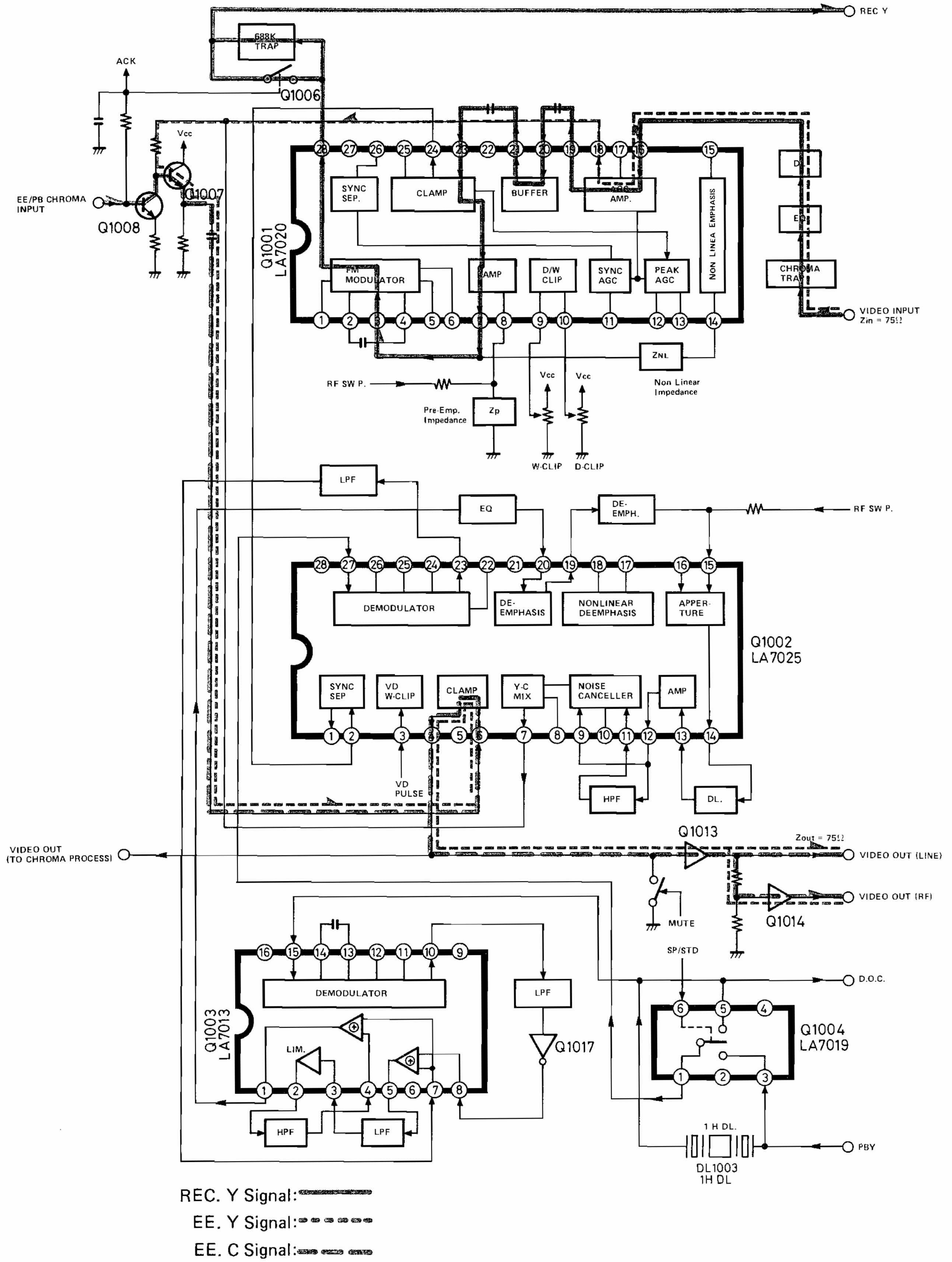

REC Y
688K TRAP
ACK
Q1006
Vcc
EE/PB CHROMA INPUT
Q1008
Q1007
SYNC SEP.
CLAMP
BUFFER
AMP.
NON LINEA EMPHASIS
Q1001 LA7020
FM MODULATOR
AMP
D/W CLIP
SYNC AGC
PEAK AGC
DL
EQ
CHROMA TRAP
VIDEO INPUT Zin = 75Ω
ZNL
Non Linear Impedance
RF SW P.
Pre-Emp. Impedance
Zp
Vcc
Vcc
W-CLIP
D-CLIP
LPF
EQ
DE-EMPH.
RF SW P.
DEMODULATOR
DE-EMPHASIS
NONLINEAR DEEMPHASIS
APPER-TURE
Q1002 LA7025
SYNC SEP
VD W-CLIP
CLAMP
Y-C MIX
NOISE CANCELLER
AMP
VD PULSE
HPF
DL.
Q1013
Zout = 75Ω
VIDEO OUT (TO CHROMA PROCESS)
VIDEO OUT (LINE)
VIDEO OUT (RF)
MUTE
Q1014
SP/STD
DEMODULATOR
LIM.
Q1003 LA7013
HPF
LPF
LPF
Q1017
D.O.C.
Q1004 LA7019
1 H DL.
DL1003 1H DL
PBY
REC. Y Signal:
EE. Y Signal:
EE. C Signal:

Fig. 2-1-2 Luminance process (VD-1, REC and EE mode)

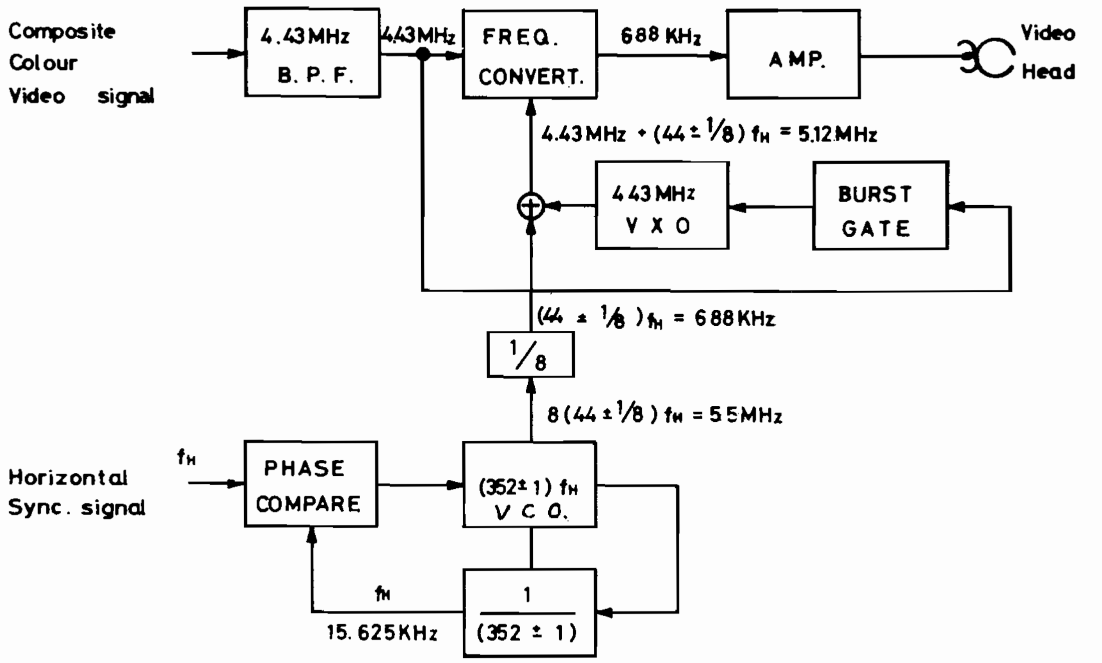

Composite
Colour
Video signal
4.43MHz
B. P. F.
4.43MHz
FREQ.
CONVERT.
688 KHz
AMP.
Video
Head
4.43MHz + (44 ± 1/8) fH = 5.12MHz
4.43MHz
V X O
BURST
GATE
(44 ± 1/8) fH = 688KHz
1/8
8 (44 ± 1/8) fH = 5.5MHz
fH
Horizontal
Sync. signal
PHASE
COMPARE
(352 ± 1) fH
V C O.
fH
15.625KHz
1
(352 ± 1)

Fig. 2-1-3 Colour signal process (REC mode)

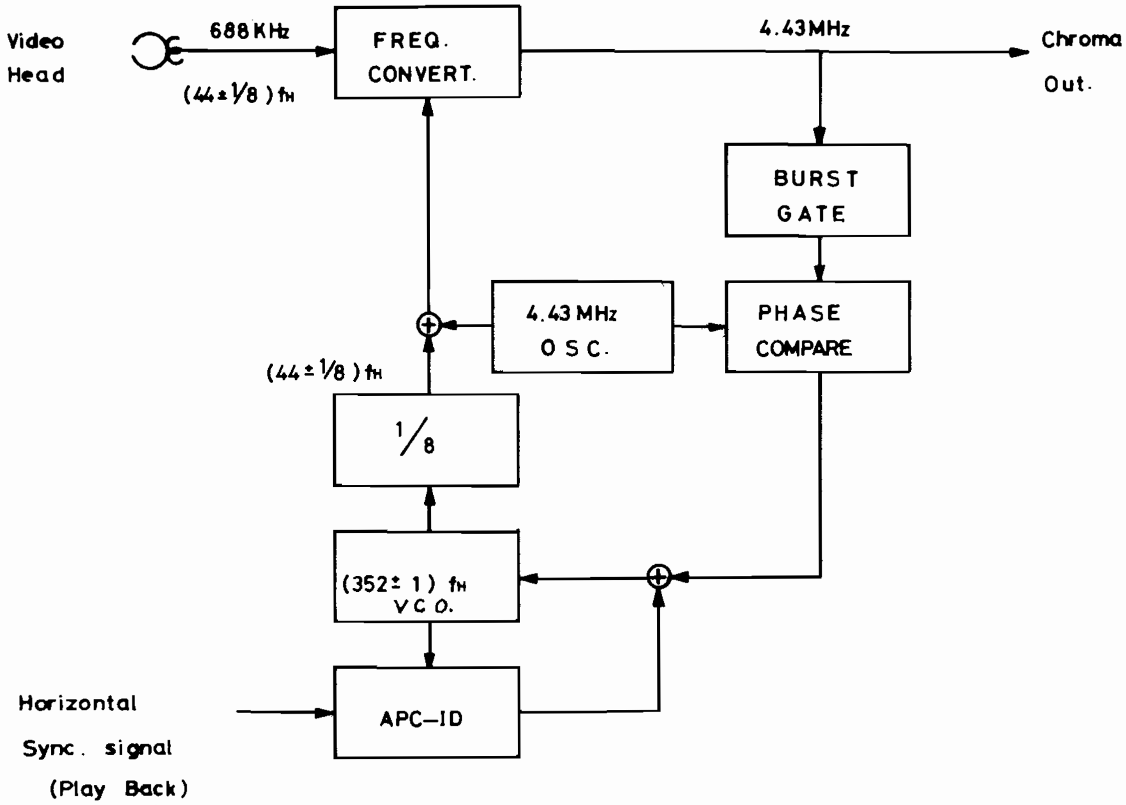

Video
Head
688 KHz
(44 ± 1/8) fH
FREQ.
CONVERT.
4.43MHz
Chroma
Out.
BURST
GATE
4.43 MHz
O S C.
PHASE
COMPARE
(44 ± 1/8) fH
1/8
(352 ± 1) fH
V C O.
APC–ID
Horizontal
Sync. signal
(Play Back)

Fig. 2-1-4 Colour signal process (P.B mode)

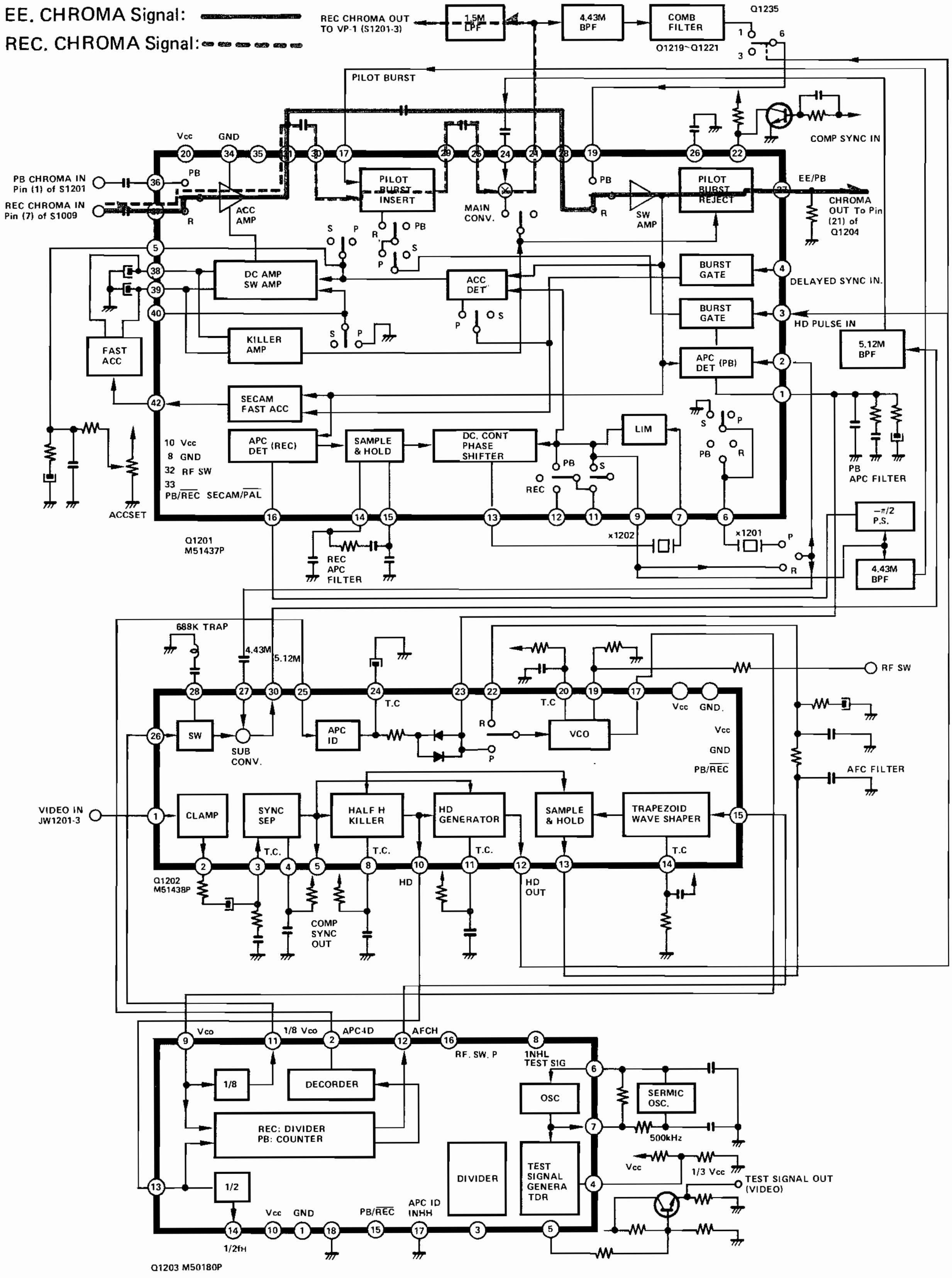

EE. CHROMA Signal:
REC. CHROMA Signal:
REC CHROMA OUT TO VP-1 (S1201-3)
1.5M LPF
4.43M BPF
COMB FILTER
Q1219~Q1221
Q1235
PILOT BURST
Vcc
GND
COMP SYNC IN
PB CHROMA IN Pin (1) of S1201
REC CHROMA IN Pin (7) of S1009
PB
R
ACC AMP
PILOT BURST INSERT
MAIN CONV.
PB
R
SW AMP
PILOT BURST REJECT
EE/PB
CHROMA OUT To Pin (21) of Q1204
S
P
DC AMP SW AMP
ACC DET
BURST GATE
DELAYED SYNC IN.
BURST GATE
HD PULSE IN
FAST ACC
KILLER AMP
5.12M BPF
APC (PB) DET
SECAM FAST ACC
APC (REC) DET
SAMPLE & HOLD
DC. CONT PHASE SHIFTER
LIM
10 Vcc
8 GND
32 RF SW
33 PB/REC SECAM/PAL
REC
PB APC FILTER
ACCSET
Q1201 M51437P
x1202
x1201
REC APC FILTER
−π/2 P.S.
4.43M BPF
688K TRAP
4.43M
5.12M
T.C
R
P
APC ID
VCO
RF SW
Vcc
GND.
Vcc
GND
PB/REC
SW
SUB CONV.
AFC FILTER
VIDEO IN JW1201-3
CLAMP
SYNC SEP
HALF H KILLER
HD GENERATOR
SAMPLE & HOLD
TRAPEZOID WAVE SHAPER
T.C.
Q1202 M51438P
HD
HD OUT
COMP SYNC OUT
Vco
1/8 Vco
APC-ID
AFCH
RF. SW. P
INHL TEST SIG
1/8
DECORDER
REC: DIVIDER PB: COUNTER
OSC
SERMIC OSC.
500kHz
1/2
DIVIDER
TEST SIGNAL GENERA TOR
1/3 Vcc
TEST SIGNAL OUT (VIDEO)
Vcc
GND
PB/REC
APC ID INHH
1/2fH
Q1203 M50180P

Fig. 2-1-5 Chroma system (VD-2 REC mode)

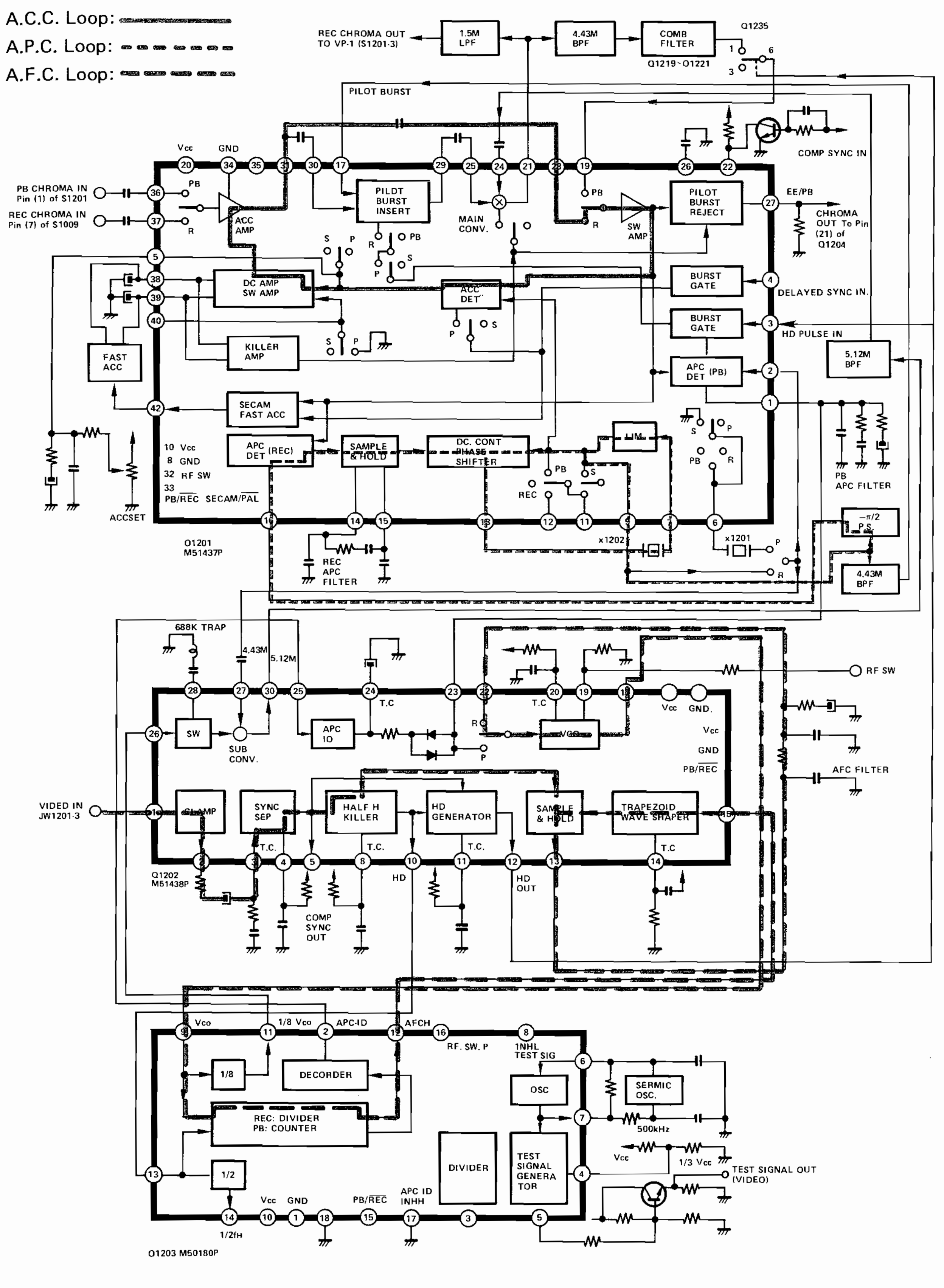

A.C.C. Loop:
A.P.C. Loop:
A.F.C. Loop:
REC CHROMA OUT TO VP-1 (S1201-3)
1.5M LPF
4.43M BPF
COMB FILTER
Q1235
Q1219~Q1221
PILOT BURST
COMP SYNC IN
Vcc
GND
PB CHROMA IN Pin (1) of S1201
REC CHROMA IN Pin (7) of S1009
PB
R
ACC AMP
PILDT BURST INSERT
MAIN CONV.
S
P
PB
SW AMP
PILOT BURST REJECT
EE/PB
CHROMA OUT To Pin (21) of Q1204
DC AMP SW AMP
ACC DET
BURST GATE
DELAYED SYNC IN.
BURST GATE
HD PULSE IN
FAST ACC
KILLER AMP
APC DET (PB)
5.12M BPF
SECAM FAST ACC
PB APC FILTER
10 Vcc
8 GND
32 RF SW
33 PB/REC SECAM/PAL
APC DET (REC)
SAMPLE & HOLD
DC. CONT PHASE SHIFTER
LIM
REC
x1202
x1201
−π/2 P.S.
4.43M BPF
ACCSET
Q1201 M51437P
REC APC FILTER
688K TRAP
4.43M
5.12M
T.C
SW
SUB CONV.
APC IO
VCO
RF SW
Vcc
GND.
PB/REC
AFC FILTER
VIDEO IN JW1201-3
CLAMP
SYNC SEP
HALF H KILLER
HD GENERATOR
SAMPLE & HOLD
TRAPEZOID WAVE SHAPER
T.C.
HD
HD OUT
Q1202 M51438P
COMP SYNC OUT
Vco
1/8 Vco
APC-ID
AFCH
RF. SW. P
INHL TEST SIG
1/8
DECORDER
REC: DIVIDER PB: COUNTER
OSC
SERMIC OSC.
500kHz
Vcc
1/3 Vcc
TEST SIGNAL OUT (VIDEO)
1/2
DIVIDER
TEST SIGNAL GENERATOR
Vcc GND
PB/REC
APC ID INHH
1/2fH
Q1203 M50180P

Fig. 2-1-6 Chroma system (VD-2 REC mode)

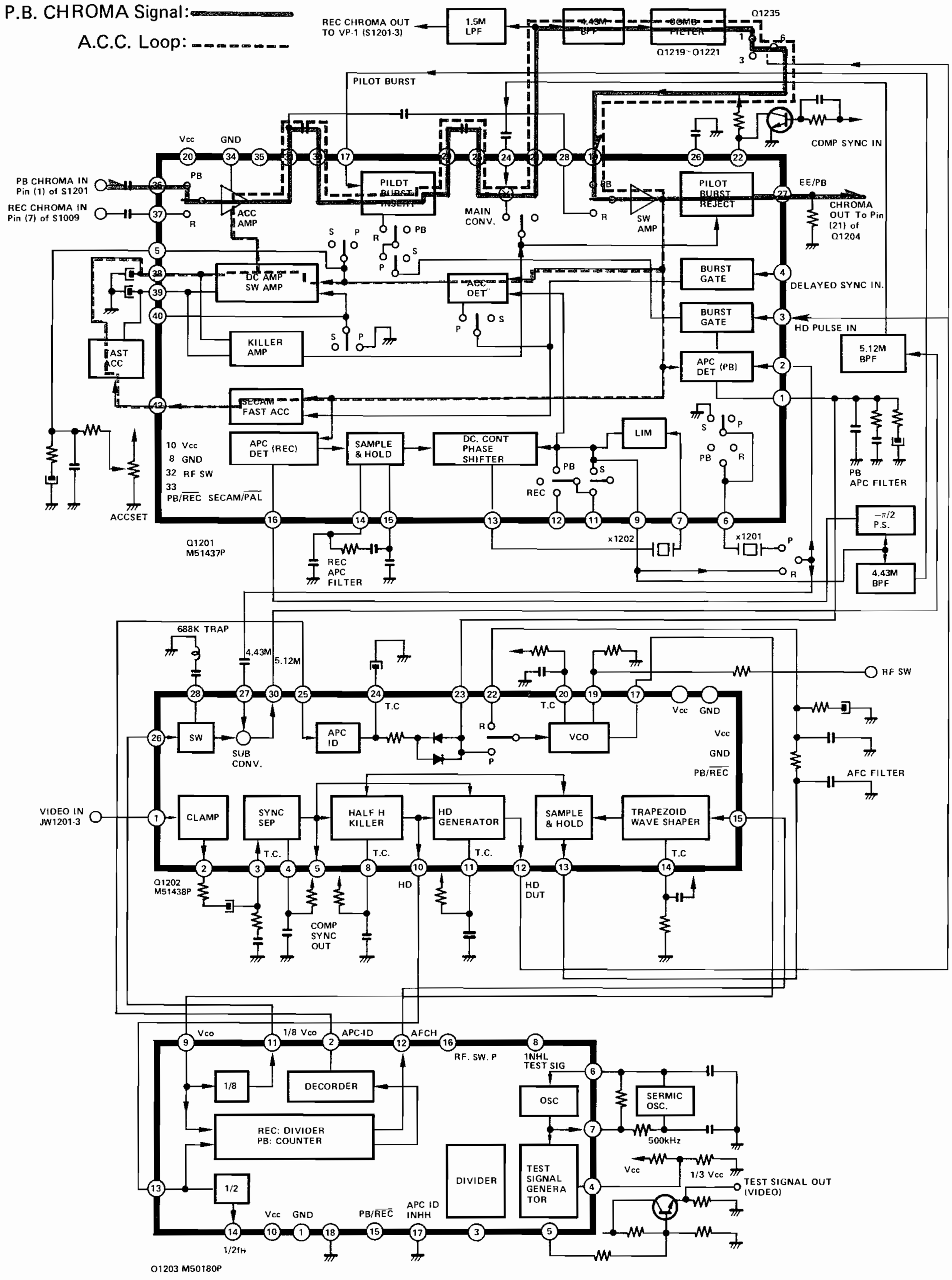

P.B. CHROMA Signal:
A.C.C. Loop:
REC CHROMA OUT TO VP-1 (S1201-3)
1.5M LPF
4.43M BPF
COMB FILTER
Q1235
Q1219~Q1221
PILOT BURST
COMP SYNC IN
Vcc
GND
PB CHROMA IN Pin (1) of S1201
REC CHROMA IN Pin (7) of S1009
PB
R
ACC AMP
PILOT BURST INSERT
MAIN CONV.
SW AMP
PILOT BURST REJECT
EE/PB
CHROMA OUT To Pin (21) of Q1204
DC AMP SW AMP
ACC DET
BURST GATE
DELAYED SYNC IN.
BURST GATE
HD PULSE IN
FAST ACC
KILLER AMP
APC DET (PB)
5.12M BPF
SECAM FAST ACC
LIM
10 Vcc
8 GND
32 RF SW
33 PB/REC SECAM/PAL
APC DET (REC)
SAMPLE & HOLD
DC. CONT PHASE SHIFTER
PB APC FILTER
ACCSET
Q1201 M51437P
x1202
x1201
−π/2 P.S.
4.43M BPF
REC APC FILTER
688K TRAP
4.43M
5.12M
T.C
RF SW
SW
SUB CONV.
APC ID
VCO
Vcc
GND
PB/REC
AFC FILTER
VIDEO IN JW1201-3
CLAMP
SYNC SEP
HALF H KILLER
HD GENERATOR
SAMPLE & HOLD
TRAPEZOID WAVE SHAPER
Q1202 M51438P
HD
HD DUT
COMP SYNC OUT
Vco
1/8 Vco
APC-ID
AFCH
RF. SW. P
INHL TEST SIG
1/8
DECORDER
OSC
SERMIC OSC.
REC: DIVIDER PB: COUNTER
500kHz
Vcc
1/3 Vcc
DIVIDER
TEST SIGNAL GENERATOR
TEST SIGNAL OUT (VIDEO)
1/2
1/2fH
Vcc
GND
PB/REC
APC ID INHH
Q1203 M50180P

Fig. 2-1-7 Chroma system (VD-2 P.B mode)

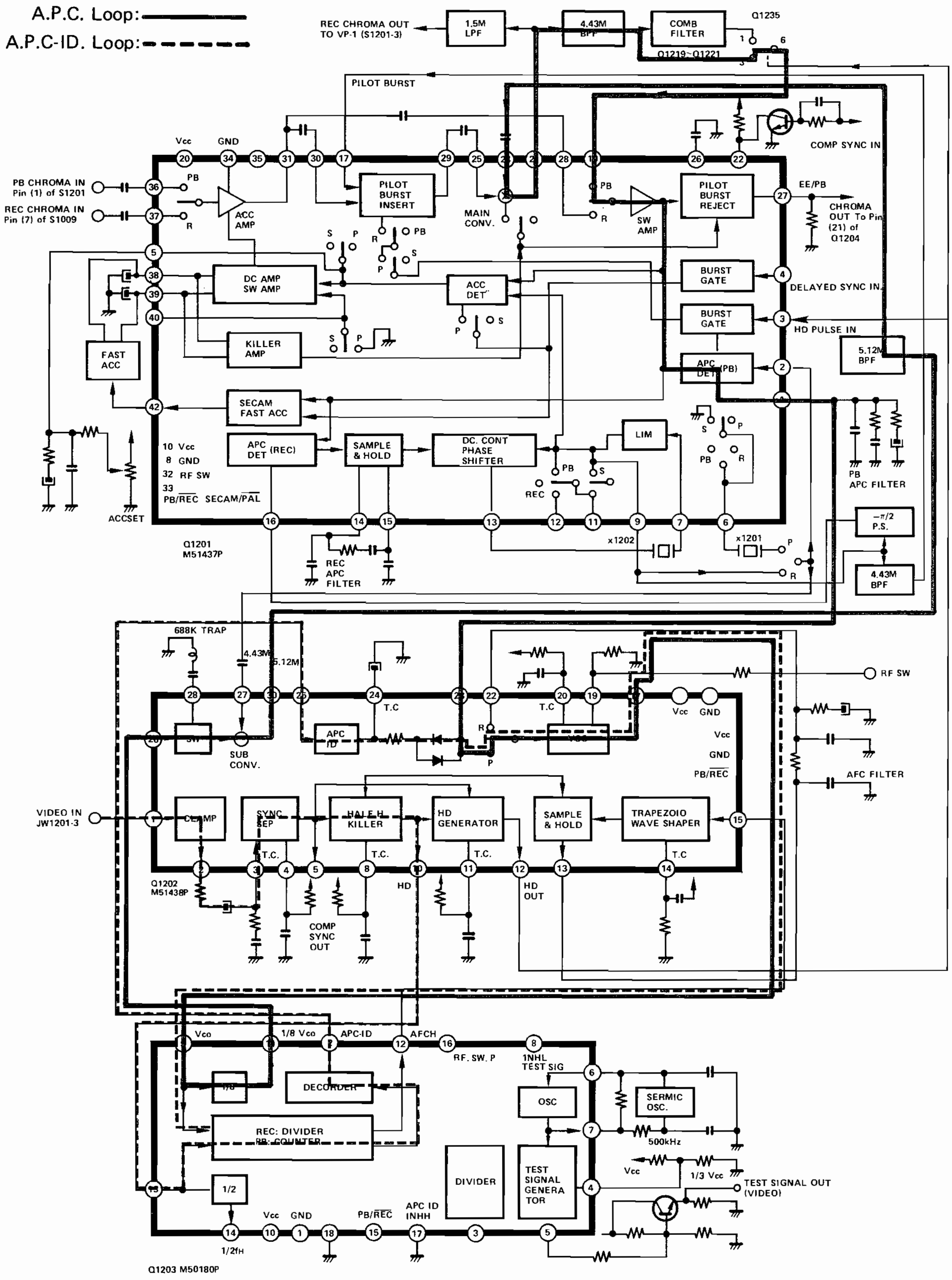

A.P.C. Loop:
A.P.C-ID. Loop:
REC CHROMA OUT
TO VP-1 (S1201-3)
1.5M LPF
4.43M BPF
COMB FILTER
Q1235
Q1219~Q1221
PILOT BURST
COMP SYNC IN
Vcc
GND
PB CHROMA IN
Pin (1) of S1201
REC CHROMA IN
Pin (7) of S1009
ACC AMP
PILOT BURST INSERT
MAIN CONV.
SW AMP
PILOT BURST REJECT
EE/PB
CHROMA OUT To Pin (21) of Q1204
DC AMP SW AMP
ACC DET
BURST GATE
DELAYED SYNC IN
BURST GATE
HD PULSE IN
5.12M BPF
FAST ACC
KILLER AMP
APC DET (PB)
SECAM FAST ACC
PB APC FILTER
10 Vcc
8 GND
32 RF SW
33 PB/REC SECAM/PAL
APC DET (REC)
SAMPLE & HOLD
DC. CONT PHASE SHIFTER
LIM
ACCSET
REC
x1202
x1201
−π/2 P.S.
4.43M BPF
Q1201
M51437P
REC APC FILTER
688K TRAP
4.43M
5.12M
SW
SUB CONV.
APC ID
VCO
Vcc
GND
PB/REC
RF SW
AFC FILTER
VIDEO IN
JW1201-3
CLAMP
SYNC SEP
HALF H KILLER
HD GENERATOR
SAMPLE & HOLD
TRAPEZOID WAVE SHAPER
T.C.
Q1202
M51438P
COMP SYNC OUT
HD
HD OUT
Vco
1/8 Vco
APC-ID
AFCH
RF. SW. P
INHL TEST SIG
1/8
DECORDER
REC: DIVIDER
PB: COUNTER
OSC
SERMIC OSC.
500kHz
1/3 Vcc
TEST SIGNAL OUT (VIDEO)
DIVIDER
TEST SIGNAL GENERATOR
1/2
1/2fH
Vcc
GND
PB/REC
APC ID INHH
Q1203 M50180P

Fig. 2-1-8 Chroma system (VD-2 P.B mode)

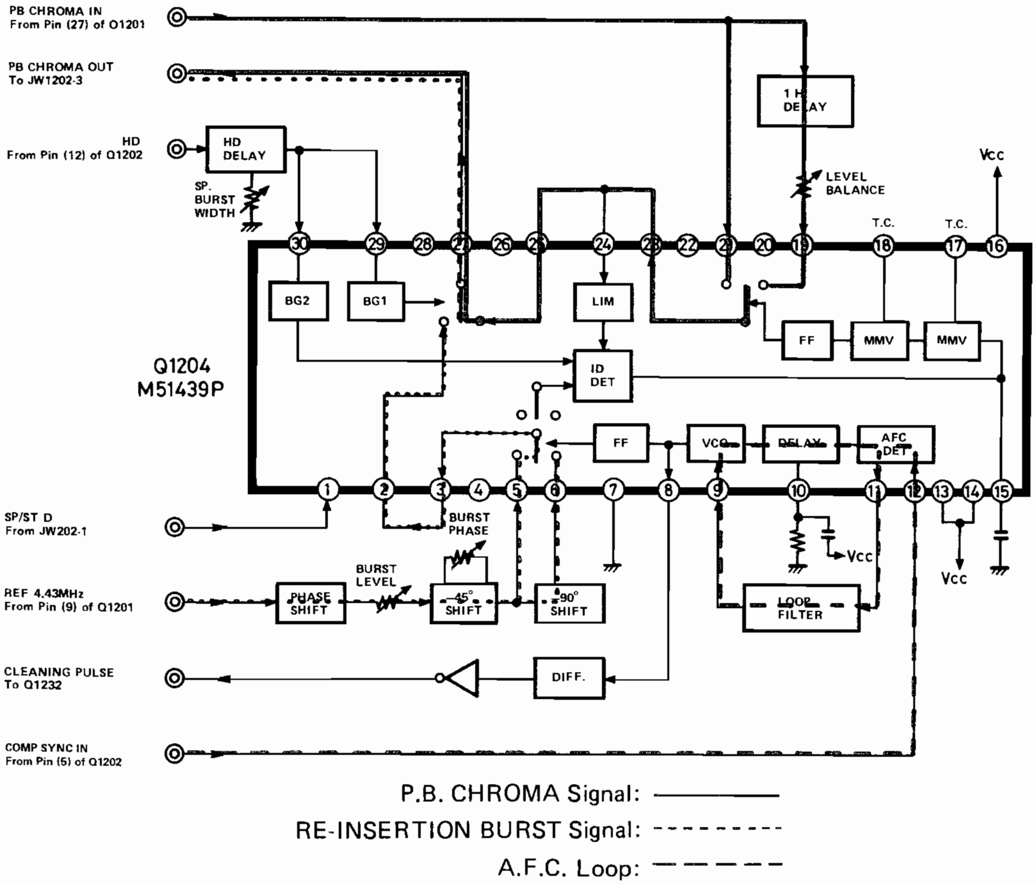

PB CHROMA IN
From Pin (27) of Q1201
PB CHROMA OUT
To JW1202-3
HD
From Pin (12) of Q1202
HD DELAY
SP. BURST WIDTH
1 H DELAY
LEVEL BALANCE
Vcc
T.C.
T.C.
BG2
BG1
LIM
FF
MMV
MMV
Q1204
M51439P
ID DET
FF
VCO
DELAY
AFC DET
SP/ST D
From JW202-1
BURST PHASE
BURST LEVEL
Vcc
Vcc
REF 4.43MHz
From Pin (9) of Q1201
PHASE SHIFT
45° SHIFT
90° SHIFT
LOOP FILTER
CLEANING PULSE
To Q1232
DIFF.
COMP SYNC IN
From Pin (5) of Q1202
P.B. CHROMA Signal: ————
RE-INSERTION BURST Signal: ---------
A.F.C. Loop: — — — — —

Fig. 2-1-9 Special playback (VD-2 play mode)

B. SERVO CIRCUIT

1. Outline

The drum motor circuit (SV-3) and capstan motor circuit (SV-2) are identical to those used on previous models. Other circuits are built into the two circuit boards, SV-1 and SV-4, but the ICs used are identical to those used on previous models.

2. Drum Servo Circuit

The drum servo circuit is built around IC: CX186 (Q4001) of circuit board SV-1.

The drum motor, simultaneously with the start of the speed servo and based on the PG signal from the PG coil, makes the drum revolution phase constant, comparing it with the PG signal and the phase of the vertical sync signal (which is divided from the video input signal) during RECORD.

During PLAY the drum revolution phase is compared to the phase of a 50 Hz base signal which is counted down from 31.250 kHz on the SV-4 circuit board, the phase servo is applied, and the phase of the drum revolution is kept constant.

3. Capstan servo circuit

The capstan servo circuit is built around IC: CX143A (Q4002) of circuit board SV-1.

This circuit is built for the following purposes:

(1) Maintain a stable tape speed

(2) To function as a tracking servo during PLAYBACK

Fast forward, rewind, etc. are performed by the reel motor, but these are controlled by the system control circuit.

Fig. 2-2-1 shows that block diagram for the SV-1 servo circuit.

4. Picture search

There are two drive systems, the reel drive and capstan drive systems, used in PICTURE SEARCH functions; this unit employs the capstan drive system. This system has the following merits as compared to the reel drive system:

(1) tape speed changes due to the reel's winding diameter are not present.

(2) there are few noise bars

(3) noise bars stabilize for easier viewing

a. Changing the number of revolutions of the drum during playback variations

In order for the tape speed to increase approximately 5 times during PICTURE SEARCH, the video heads trace over a number of tape patterns. In one tape pattern there is a signal of 312.5 H signal recorded, but so that the relative speed of heads and tape is different during PICTURE SEARCH, a [312.5 – (m – 1)] H signal is played back in one trace of the video heads. "m" is a multiple of the normal tape speed, and it becomes minus (–) during REV SEARCH.

Thus, the horizontal sync frequency shifts, the television's horizontal sync goes out, and the image rolls on the screen during PICTURE SEARCH. Because of this, the number of revolutions of the video heads changes, getting rid of horizontal sync frequency shifts during PICTURE SEARCH.

At this time, vertical sync frequency shifts from the normal 50 Hz. However, because the television's vertical sync range is generally wider than the horizontal frequency range, there is no problem in normal usage.

b. Video head tracking

The tape tracking situation of the video head during PICTURE SEARCH is shown in Fig. 2-2-2.

For high-speed FWD SEARCH, the tape is transported at 5 times normal tape speed in the same direction as tape movement during normal playback. Therefore, when video head A begins tracing from the start of track A1, it intersects tracks B1, A2, B2, until it reaches the end of track A3. This corresponds to one field of a played back video signal. At this time, the playback head output obtained is only tracks A1, A2 and A3, because video heads A and B each have the same azimuth angle.

Video head B for the next field starts tracing from the start of track B3, intersecting tracks A4, B4, and A5, finishing tracing at the end of track B5. As seen in the diagram for the head output at this time, noise position is in the same position in field A and field B.

When this is seen on a television screen, only 2 noise bars will appear, and 3 in REV SEARCH.

On reel drive systems, 4 noise bars will appear because tape speed cannot be accurately controlled.

5. VD pulse generating circuit

In PICTURE SEARCH and STILL noise bars appear in the image on the screen. However, if these noise bars come to the vertical sync signal part of the video signal, the television's vertical sync shifts, and the image becomes hard to watch due to vertical shifting. In order to prevent this vertical shifting, it is necessary to insert a false vertical sync signal during playback variations. The circuit producing this false vertical sync signal is the VD pulse generating circuit.

The RF SW pulse produced by the SV-1 circuit board is supplied to S4502 pin 4 of S4502 and this pulse's increases and decreases (each correct sync signal before 7H) are differentiated by each C4508. R4532 and C4509. R4536, phase matched by Q4513, reversed by Q4511, and supplied to the video circuit. Q4512 turns on in FWD SEARCH, REV SEARCH, and STILL, and the video pulse is transmitted to the video circuit only at this time.

Fig. 2-2-3 shows the block diagram for the servo circuit (SV-4).

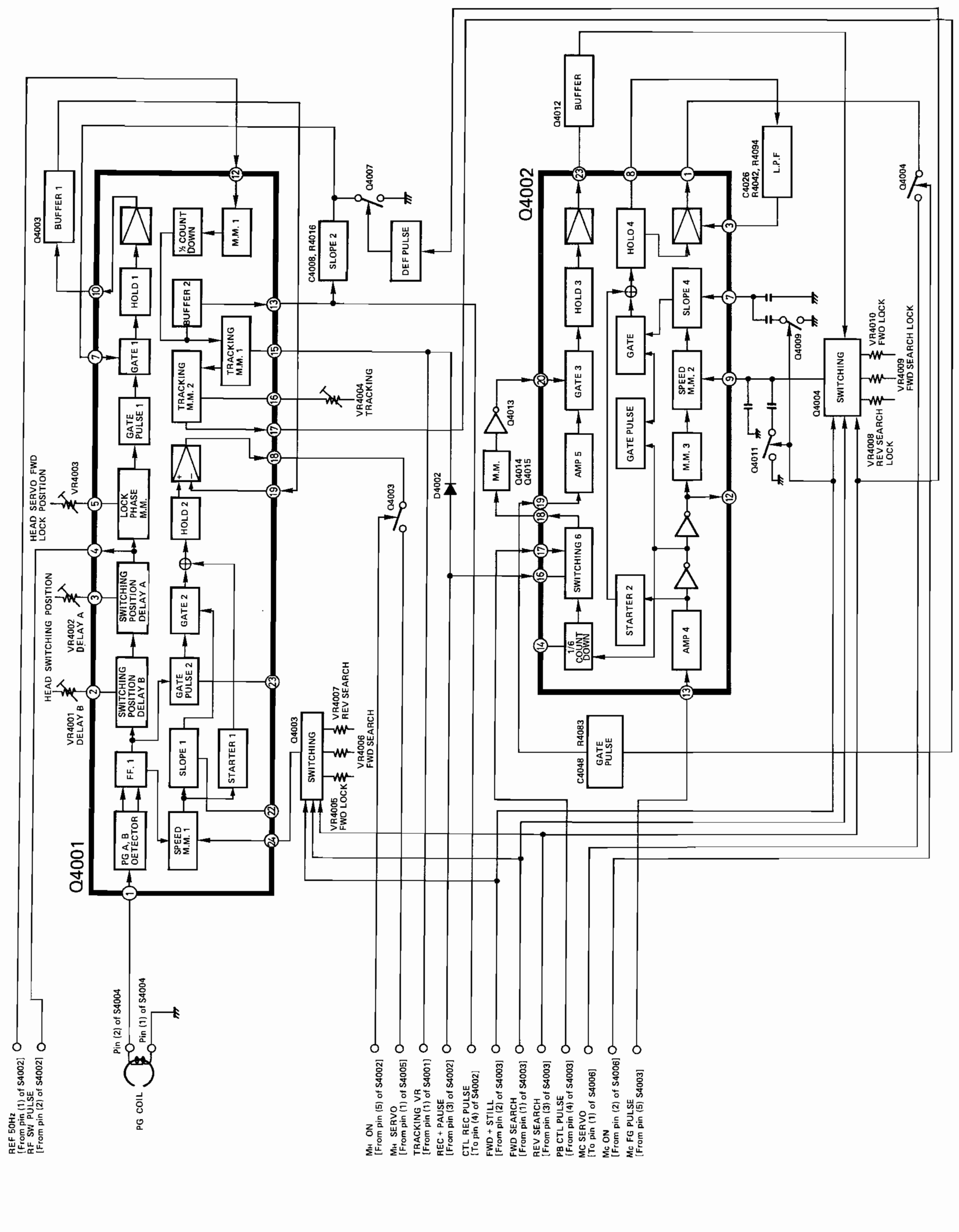

Q4001
PG A, B DETECTOR
FF. 1
SWITCHING POSITION DELAY B
SWITCHING POSITION DELAY A
LOCK PHASE M.M.
GATE PULSE 1
GATE 1
HOLD 1
BUFFER 1
Q4003
SPEED M.M. 1
SLOPE 1
STARTER 1
GATE PULSE 2
GATE 2
HOLD 2
TRACKING M.M. 2
TRACKING M.M. 1
BUFFER 2
½ COUNT DOWN
M.M. 1
VR4001 DELAY B
VR4002 DELAY A
HEAD SWITCHING POSITION
VR4003
HEAD SERVO FWD LOCK POSITION
VR4004 TRACKING
C4008, R4016
SLOPE 2
Q4007
DEF PULSE
Q4003
SWITCHING
VR4007 REV SEARCH
VR4006 FWD SEARCH
VR4005 FWD LOCK
D4002
Q4002
Q4012
BUFFER
L.P.F
C4026 R4042, R4094
HOLD 3
HOLD 4
GATE 3
GATE
SLOPE 4
SPEED M.M. 2
AMP 5
GATE PULSE
M.M. 3
M.M.
Q4013
Q4014 Q4015
SWITCHING 6
1/6 COUNT DOWN
STARTER 2
AMP 4
Q4009
Q4011
Q4004
SWITCHING
VR4010 FWD LOCK
VR4009 FWD SEARCH LOCK
VR4008 REV SEARCH LOCK
C4048 R4083
GATE PULSE
REF 50Hz [From pin (1) of S4002]
RF SW PULSE [From pin (2) of S4002]
PG COIL
Pin (2) of S4004
Pin (1) of S4004
MH ON [From pin (5) of S4002]
MH SERVO [From pin (1) of S4005]
TRACKING VR [From pin (1) of S4001]
REC + PAUSE [From pin (3) of S4002]
CTL REC PULSE [To pin (4) of S4002]
FWD + STILL [From pin (2) of S4003]
FWD SEARCH [From pin (1) of S4003]
REV SEARCH [From pin (3) of S4003]
PB CTL PULSE [From pin (4) of S4003]
MC SERVO [To pin (1) of S4006]
Mc ON [From pin (2) of S4006]
Mc FG PULSE [From pin (5) S4003]

Fig. 2-2-1 Servo circuit blockdiagram (SV-1)

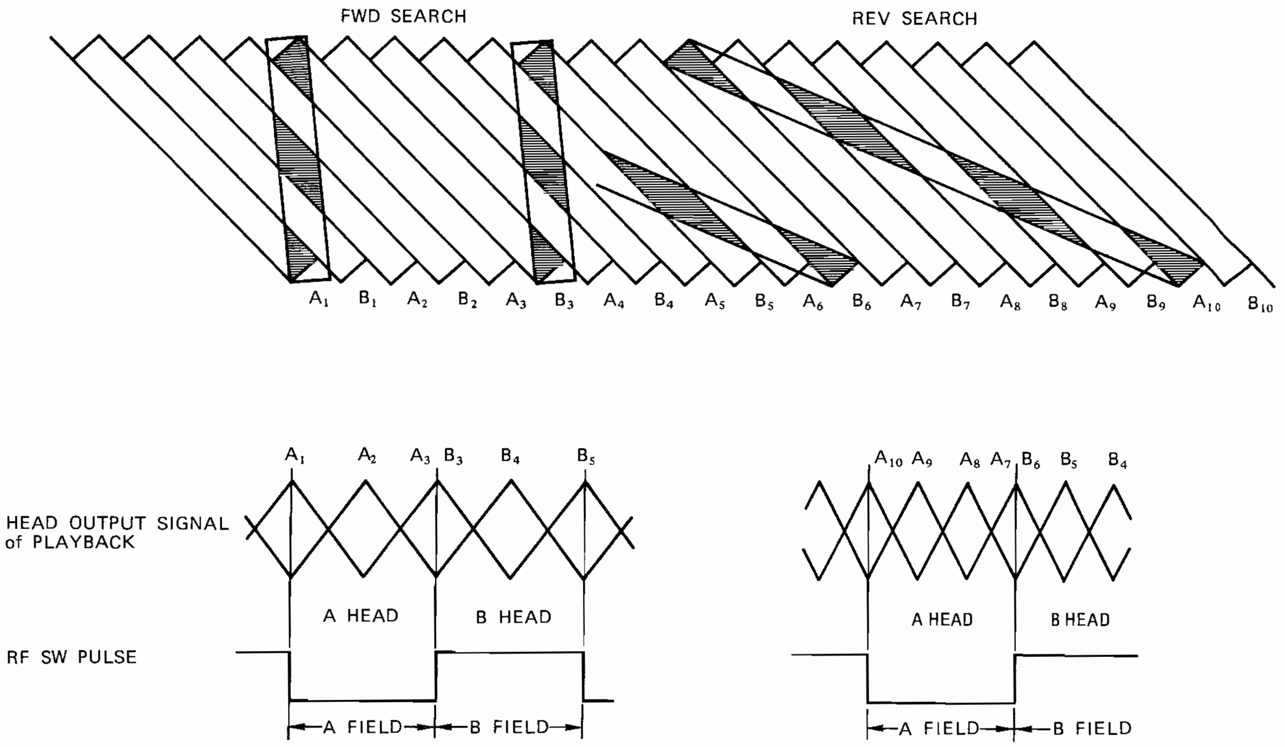

FWD SEARCH
REV SEARCH
A₁ B₁ A₂ B₂ A₃ B₃ A₄ B₄ A₅ B₅ A₆ B₆ A₇ B₇ A₈ B₈ A₉ B₉ A₁₀ B₁₀
A₁ A₂ A₃ B₃ B₄ B₅
A₁₀ A₉ A₈ A₇ B₆ B₅ B₄
HEAD OUTPUT SIGNAL of PLAYBACK
A HEAD
B HEAD
RF SW PULSE
A FIELD
B FIELD

Fig. 2-2-2 Tape tracking situation

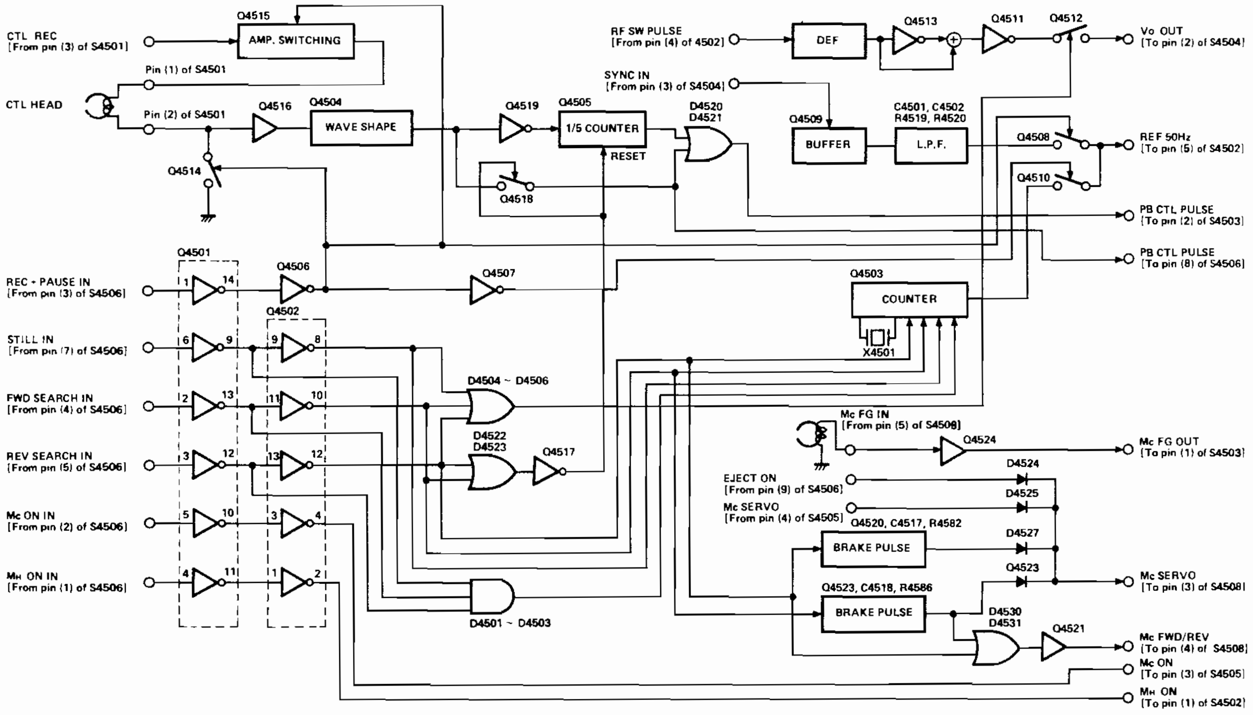

Q4515
AMP. SWITCHING
CTL REC [From pin (3) of S4501]
Pin (1) of S4501
CTL HEAD
Pin (2) of S4501
Q4516
Q4504
WAVE SHAPE
Q4514
Q4519
Q4505
1/5 COUNTER
RESET
Q4518
RF SW PULSE [From pin (4) of 4502]
DEF
Q4513
Q4511
Q4512
Vo OUT [To pin (2) of S4504]
SYNC IN [From pin (3) of S4504]
D4520
D4521
Q4509
BUFFER
C4501, C4502
R4519, R4520
L.P.F.
Q4508
REF 50Hz [To pin (5) of S4502]
Q4510
PB CTL PULSE [To pin (2) of S4503]
PB CTL PULSE [To pin (8) of S4506]
Q4501
Q4506
Q4507
Q4502
Q4503
COUNTER
X4501
REC + PAUSE IN [From pin (3) of S4506]
STILL IN [From pin (7) of S4506]
FWD SEARCH IN [From pin (4) of S4506]
REV SEARCH IN [From pin (5) of S4506]
Mc ON IN [From pin (2) of S4506]
MH ON IN [From pin (1) of S4506]
1
14
6
9
2
13
3
12
5
10
4
11
9
8
11
10
13
12
3
4
1
2
D4504 ~ D4506
D4522
D4523
Q4517
D4501 ~ D4503
Mc FG IN [From pin (5) of S4508]
Q4524
Mc FG OUT [To pin (1) of S4503]
D4524
EJECT ON [From pin (9) of S4506]
D4525
Mc SERVO [From pin (4) of S4505]
Q4520, C4517, R4582
BRAKE PULSE
D4527
Q4523
Q4523, C4518, R4586
BRAKE PULSE
Mc SERVO [To pin (3) of S4508]
D4530
D4531
Q4521
Mc FWD/REV [To pin (4) of S4508]
Mc ON [To pin (3) of S4505]
MH ON [To pin (1) of S4502]

Fig. 2-2-3 Servo circuit block diagram (SV-4)

6. Reference signal generating circuit

During recording, the video head revolution phase must bear a relationship to the recording video signal and a certain uniform phase. Because of this, a vertical sync signal taken from the video signal is used as a base signal for the servo during recording.

The multiple sync signal transmitted from the video circuit board passes the low pass filter composed of R4519, C4501, R4520, and C4502, drops the horizontal sync signal, becoming only a vertical sync signal.

Because 12V is supplied to the Q4508 collector during recording the signal is reversed by Q4508, and sent to SV-1 as a base signal during recording. During playback, 31.250 kHz is oscillated by a crystal, and then 50 Hz is generated by frequency division of this.

During normal playback, pin 1 of Q4503 becomes HIGH, and Q4503 divides the frequency by 1/625 at the IC having the counter and crystal oscillation circuit.

To change the number of revolutions of the drum during playback variations, the signal is divided by 1/627, 1/617 and 1/637, and pin 2 is changed to HIGH, pin 5 to HIGH, and pin 6 to HIGH, for STILL, FWD SEARCH and REV SEARCH, respectively.

Because the drum locks on this signal and revolves during playback, in playback variations revolution is slower in STILL and REV SEARCH, and faster in FWD SEARCH, as compared to normal playback speed.

7. Control Pulse Record/Playback Circuits

a. RECORD

For RECORD, the reference signal sent from the SV-1 circuit board is inverse amplified at Q4515 of AMP SWITCHING and the scanning start time for the A head on the control track of the lower tape edge is recorded by the control head.

b. PLAY

For PLAY, the phase of the control head is inverted by Q4515 and D4513. (12V is applied to the anode of D4513 during PLAY, and Q4515 is switched ON, and the terminal on the recording side of the control head is grounded.) Also during PLAY, Q4514 becomes OFF, and the playback output is obtained from pin 2 of S4501. Because this output is approximately 3mVp-p, it is amplified about 60dB at AMP Q4516 and AMP SHAPING Q4504, and shaped into a square wave.

8. Control Pulse Divider Circuit

During PLAY, the control pulse output from Q4504 is inverted at Q4518 and supplied to the capstan servo of SV-1.

During PICTURE SEARCH, phase control must be applied to the cpastan in order to fix the noise band. And because this capstan phase control is performed by a 25Hz reference signal and the control pulse, the control pulse must also be 25Hz during PICTURE SEARCH.

The tape speed for PICTURE SEARCH is approximately 5 times normal speed, and the control pulse is therefore approximately 125Hs. This control pulse is 1/5 divided at Q4505 and 25Hz is obtained.

During PLAY, the clear terminal becomes HIGH and the output of Q4505 becomes LOW.

9. Capstan Brake Circuit

Because the capstan motor is rotating at an extremely high speed during PICTURE SEARCH, it can't make the sudden speed changes necessary for PICTURE SEARCH → PLAY or PICTURE SEARCH → STILL.

In order to accomplish this, the descending part of the CUE gate is differentiated at C4518 and R4586 and, at that instant, Q4523 is switched OFF. HIGH is then applied to the capstan motor control terminal, and LOW is applied to the FWD/REV terminal, forcefully stopping the capstan motor.

The same kind of operation occurs at C4517, R4582, and Q4520, at the end of REV PICTURE SEARCH.

10. Speed control is applied to capstan motor.

The construction of the speed control circuit is nearly the same as the speed control circuit of the drum motor.

The descending part of the FG pulse which is input to pin 13 of Q4002 is delayed about a half cycle by the two delay circuits MM3 and SPEED MM2, and a trapezoidal wave is formed at SLOPE 4. As this trapezoidal wave comes to the next descending part of the FG pulse, it is gated and held by the gate pulse formed at GATE PULSE 4 and, after current amplification, it is output from pin 1 and supplied to the capstan motor drive circuit.

Because there are three speeds—normal PLAY, FWD PICTURE SEARCH, and REV PICTURE SEARCH—there must be three kinds of speed control circuits. This is accomplished by switching the time constant of SPEED MM2 at Q4004 SWITCHING and Q4011. Also, because the capstan response varies between normal PLAY and PICTURE SEARCH, the slope of the trapezoidal wave is altered at Q4010 and matched to the respective speed.

During RECORD and PICTURE SEARCH, pin 12 of Q4004 becomes HIGH, continuity exists between pin 11 and pin 12, and VR4008, R4092, C4033, and C4034 become the time constant. During REV, VR4010, R4086, and C4033 become the time constant. And during CUE, VR4009, R4089, and C4033 become the time constant.

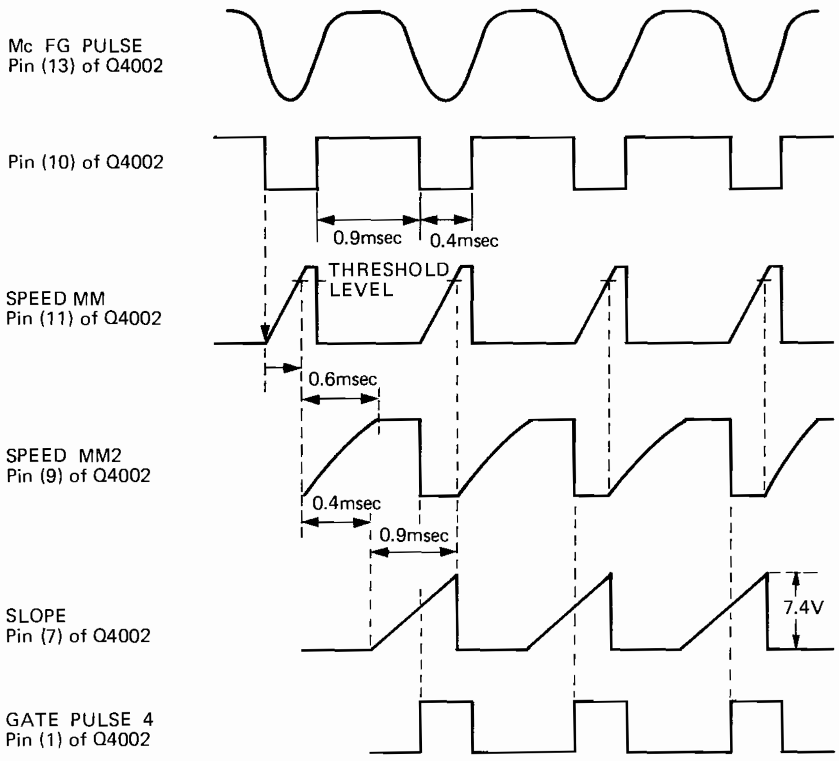

Mc FG PULSE
Pin (13) of Q4002
Pin (10) of Q4002
0.9msec
0.4msec
THRESHOLD LEVEL
SPEED MM
Pin (11) of Q4002
0.6msec
SPEED MM2
Pin (9) of Q4002
0.4msec
0.9msec
SLOPE
Pin (7) of Q4002
7.4V
GATE PULSE 4
Pin (1) of Q4002

Fig. 2-2-4 Timing chart (Capstan servo)

C. SYSTEM CONTROL CIRCUIT

1. Outline

a. Each of IN PUT signal

Sensor: Tape end sensor Dew sensor
Reel sensor CTL sensor
Each of button: PLAY Button EJECT Button
STOP Button REC Button
REW/REV SEARCH Button
LOCK Button
F FWD/FWD SEARCH Button
AUD DUB Button
PAUSE/STILL Button
MECHANISM SW: CASSETTE SW
ERASURE PREVENTION SW
LOADING SW TAPE COUNTER SW
EJECT SW
TIME: TIMER. REC
REMOTE CONTROL: (OPTION) PLAY, STOP, REW, F FWD, PAUSE /STILL, CAMERA PAUSE

b. Each of OUTPUT signal

SERVO: M_H, Mc, REC, FWD SEARCH, REV SEARCH, STILL, EJECT
VIDEO CONTROL: REC-EE, REC, V-MUTE, SPECIAL PLAY
AUDIO CONTROL: AUD-DUB, AUD-MUTE.
LED DRIVE: PAUSE, F FWD, PLAY, REW, REC, DEW, AUD-DUE
REEL MOTOR DRIVE SOLENOID
DRIVE: PINCH ROLLER, F FWD/REW, EJECT

The system control circuit takes in each of the above mentioned input signals, processes them in a microcomputer and puts out output signals like those mentioned above to control the mechanism, and video, audio, and servo circuits.

The block diagram for the system control circuit is shown in Fig. 2-3-1.

2. Explanation of Operation

The operation that takes place when a tape is put into the VCR and it is played back from the STOP mode.

When the PLAY button is pressed, the input signal from the button is taken in by the microcomputer and the VCR goes to the PLAY mode. Immediately after this, M_H, and Mc signals are sent to the servo, and the head motor and capstan motor begin turning. At the same time a signal is sent to the PLAY LED and it illuminates. 0.1 seconds later the reel motor begins turning and then 0.2 seconds later the pinch roller solenoid engages the pinch roller and the tape begins to travel. The reason for spacing the timing out like this, is to reduce the load put on the

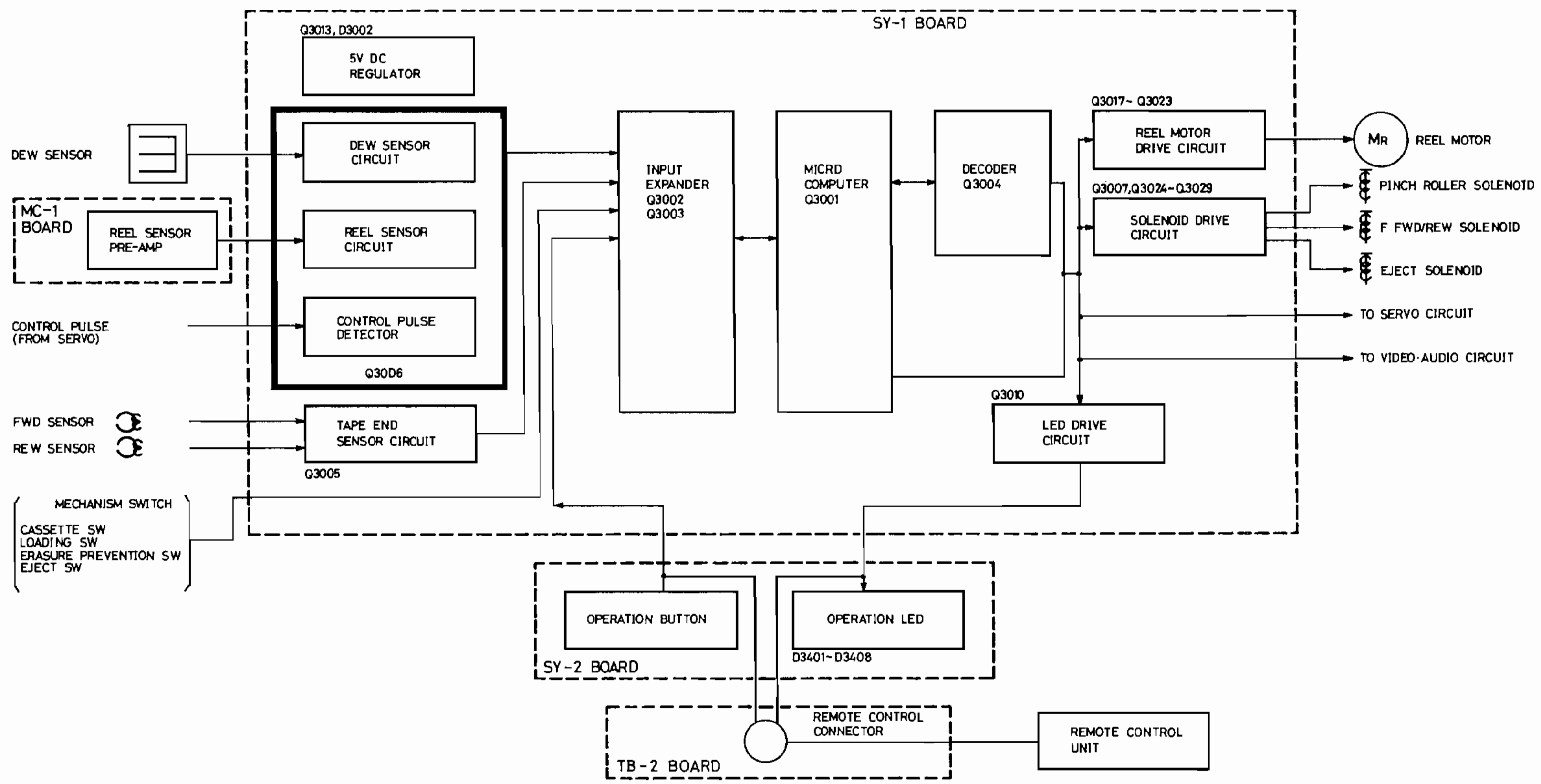

SY-1 BOARD
Q3013, D3002
5V DC REGULATOR
DEW SENSOR
DEW SENSOR CIRCUIT
MC-1 BOARD
REEL SENSOR PRE-AMP
REEL SENSOR CIRCUIT
CONTROL PULSE (FROM SERVO)
CONTROL PULSE DETECTOR
Q30D6
FWD SENSOR
REW SENSOR
TAPE END SENSOR CIRCUIT
Q3005
MECHANISM SWITCH
CASSETTE SW
LOADING SW
ERASURE PREVENTION SW
EJECT SW
INPUT EXPANDER Q3002 Q3003
MICRD COMPUTER Q3001
DECODER Q3004
Q3017~ Q3023
REEL MOTOR DRIVE CIRCUIT
MR
REEL MOTOR
Q3007,Q3024~Q3029
SOLENOID DRIVE CIRCUIT
PINCH ROLLER SOLENOID
F FWD/REW SOLENOID
EJECT SOLENOID
TO SERVO CIRCUIT
TO VIDEO·AUDIO CIRCUIT
Q3010
LED DRIVE CIRCUIT
OPERATION BUTTON
OPERATION LED
D3401~D3408
SY-2 BOARD
REMOTE CONTROL CONNECTOR
TB-2 BOARD
REMOTE CONTROL UNIT

Fig. 2-3-1 System control circuit blockdiagram

power supply circuit that would result from the large starting current if the motors were started and the solenoid operated at the same time. It also helps to make the mechanism operation more sure.

Next the REC-EE signal switches 3 seconds later, and the playback image appears on the television screen. The purpose of this 3-second period is to give the servo time to completely lock. The above is the circuit operation condition in the PLAY mode.

In this condition, if the CTL signal ceases to be sent from the servo (comes to an unrecorded part of the tape), it passes through the sensor IC and is taken in by the microcomputer. Then V-MUTE and AUD-MUTE signals are output from the microcomputer to the video and audio and the playback image disappears. (the television screen goes dark) Furthermore, in case a sensor (tape end sensor, dew sensor, reel sensor) operates, the unit goes to AUTO STOP, the motors stop, and the solenoid is released. However, when the FWD sensor operates the unit goes to AUTO REW in REW.

Table 2-3-4 and Table 2-3-5 also show at what timings the output signals for the other modes are put out.

3. How to Read the Wiring Diagram

(1) Input signals are input from the pins on the left side (excepting the TIMER REC signal)

(2) Output signals are output from pins on the right side.

(3) The bar above the inscription on the ports for the expander (Q3002, Q3003), microcomputer (Q3001), and the decoder (Q3004) indicates low active. For example, the PLAY on pin 12 of Q3003 indicates that when the $\overline{\text{PLAY}}$ button is pressed, pin 12 becomes LOW. This is what is meant by low active.

Accordingly, in PLAY when the PLAY button is pressed pin 12 $\overline{\text{PLAY}}$ of Q3003 becomes LOW, which causes pin 20 $\overline{\text{M}_\text{H}}$ of microcomputer Q3001 to go from HIGH to LOW, pin 27 $\overline{\text{Mc}}$ to go from HIGH to LOW, pin 30 $\overline{\text{M}_\text{R}}$ to go from HIGH to LOW, the pinch-roller solenoidstart $\overline{\text{P-P}_1}$↑ pulse to go from HIGH to LOW, and the pinch roller solenoid holder P-P to go from HIGH to LOW. Moreover, as shown in Tabel 2-3-1, pins 10 (B_0), 13 (B_1), and 12 (B_2) of Q3004 go from LOW to HIGH, pin 11 (B_3) goes from HIGH to LOW, and the FWD of pin 7 of Q3004 goes from LOW to HIGH.

B_0	B_1	B_2	B_3	OUTPUT MODE
0	0	0	0	PAUSE
1	0	0	0	F FWD
0	1	0	0	REW
1	1	0	0	———
0	0	1	0	FWD-SEARCH
1	0	1	0	REV-SEARCH
1	1	1	0	PLAY, REC
0	0	0	1	EJECT
1	0	0	1	UNLOADING

Table 2-3-1

4. Mechanism SW Timing

Mechanism operations are performed by switching their respective switches ON and OFF, but the ON and OFF timing is determined by the microcomputer. Fig. 2-3-2. illustrates this.

EJECT mode: the eject solenoid is engaged, the capstan motor turns, the switch is switched OFF, and next the EJECT switch is switch ON.

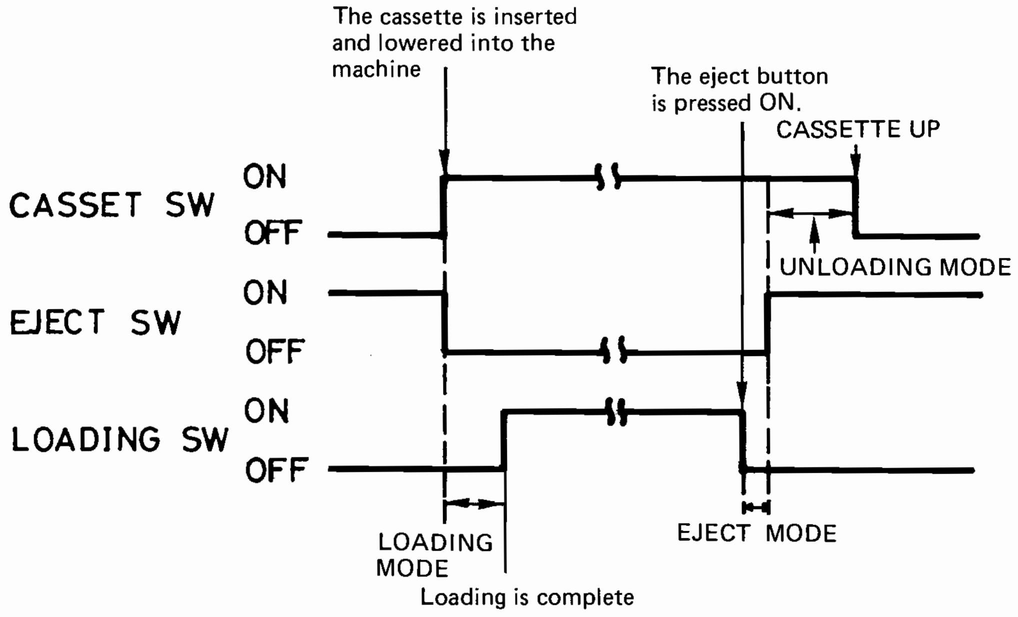


Fig. 2-3-2 Mechanism SW timing

5. Microcomputer Scan-signal Timing

A signal is input between the microcomputer and the input expander according to the timing shown in Fig. 2-3-3.

(1) Q3002 and Q3003 are selected alternately from pin 8 of Q3001. (chip selector)

(2) Furthermore, the selector signals which select ports A, B, C, and D in order for Q3002 and Q3003 are output from pins 3 ~ 5 of Q3001.

(3) The faint broad line indicates the signal for an operational mode.
For example, the signal for pin 33 of Q3001 indicates that the signal is input to pin 33 of Q3001 when the F FWD button is pressed.

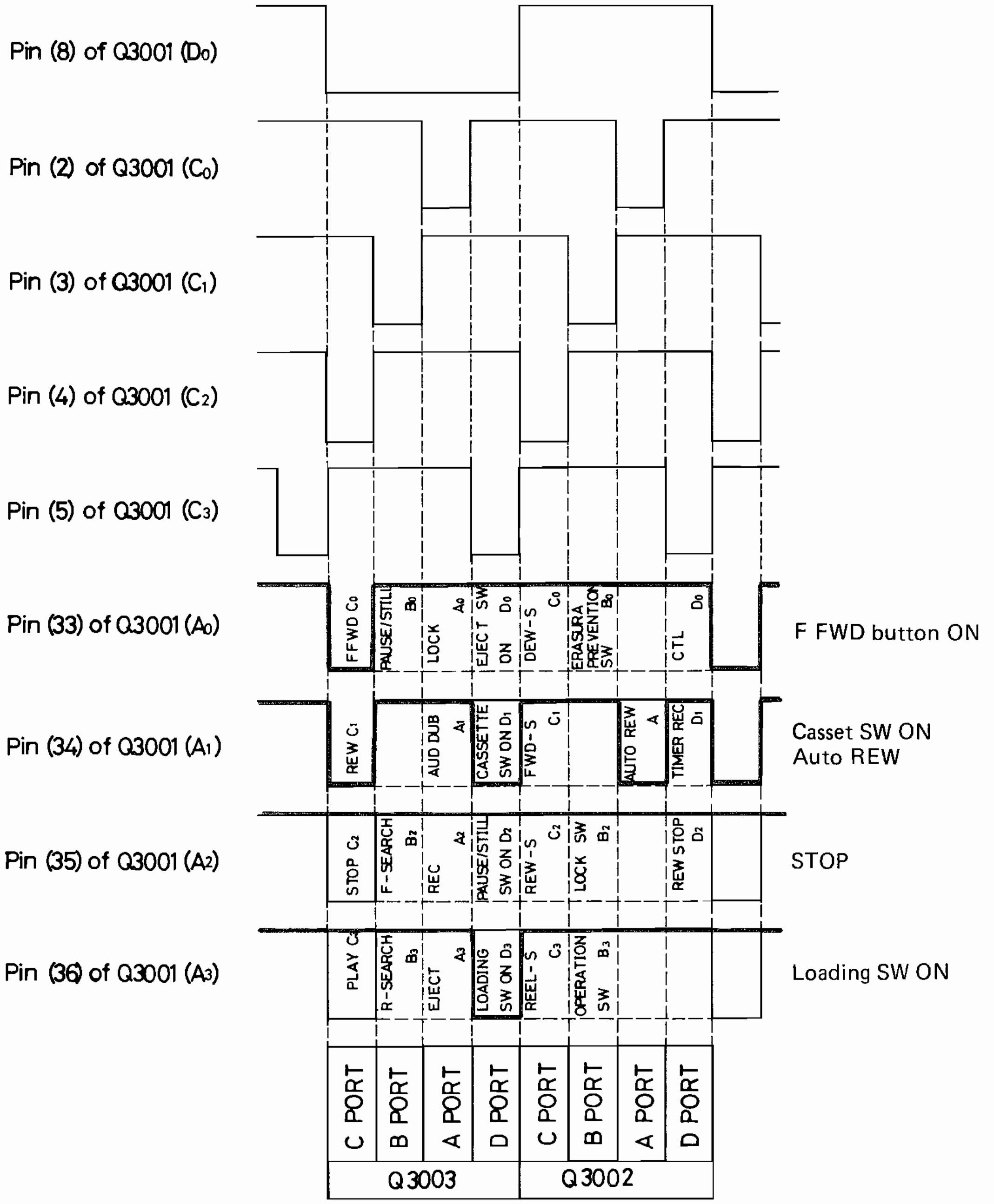

Pin (8) of Q3001 (D_0)
Pin (2) of Q3001 (C_0)
Pin (3) of Q3001 (C_1)
Pin (4) of Q3001 (C_2)
Pin (5) of Q3001 (C_3)
Pin (33) of Q3001 (A_0)
Pin (34) of Q3001 (A_1)
Pin (35) of Q3001 (A_2)
Pin (36) of Q3001 (A_3)
FFWD C_0
PAUSE/STILL B_0
LOCK A_0
EJECT SW ON D_0
DEW-S C_0
ERASURA PREVENTION SW B_0
CTL D_0
REW C_1
AUD DUB A_1
CASSETTE SW ON D_1
FWD-S C_1
AUTO REW A
TIMER REC D_1
STOP C_2
F-SEARCH B_2
REC A_2
PAUSE/STILL SW ON D_2
REW-S C_2
LOCK SW B_2
REW STOP D_2
PLAY C_3
R-SEARCH B_3
EJECT A_3
LOADING SW ON D_3
REEL-S C_3
OPERATION SW B_3
F FWD button ON
Casset SW ON
Auto REW
STOP
Loading SW ON
C PORT
B PORT
A PORT
D PORT
C PORT
B PORT
A PORT
D PORT
Q3003
Q3002

Fig. 2-3-3 Scan-signal timing chart

6. Microcomputer System

a. Hard construction

The microcomputer system is shown in Fig. 2-3-4. It consists of the one-chip microcomputer LM6402 (Q3001), the input expander LC7800 (Q3002 and Q3003), and the output decoder TC4028 (Q3004).

The 31 input signals which are input to the two input expanders Q3002 and Q3003 are converted to four 0 output signals, and then input to the 4-bit, 1-chip microcomputer.

At the 4-bit microcomputer LM6402 (Q3001), treatment corresponding to the four input signals is accomplished, and signals are then output to ports B, D, E, F, G, H, and I. The roles of the various output ports of LM6402 are shown below:

port A → 4-bit input data
port C → input port selection signal
port D0 → input expansion chip selection signal
port B → mode signal expressed in binary code

The relationship between the B-port output and the output mode is shown in Table 2-3-1.

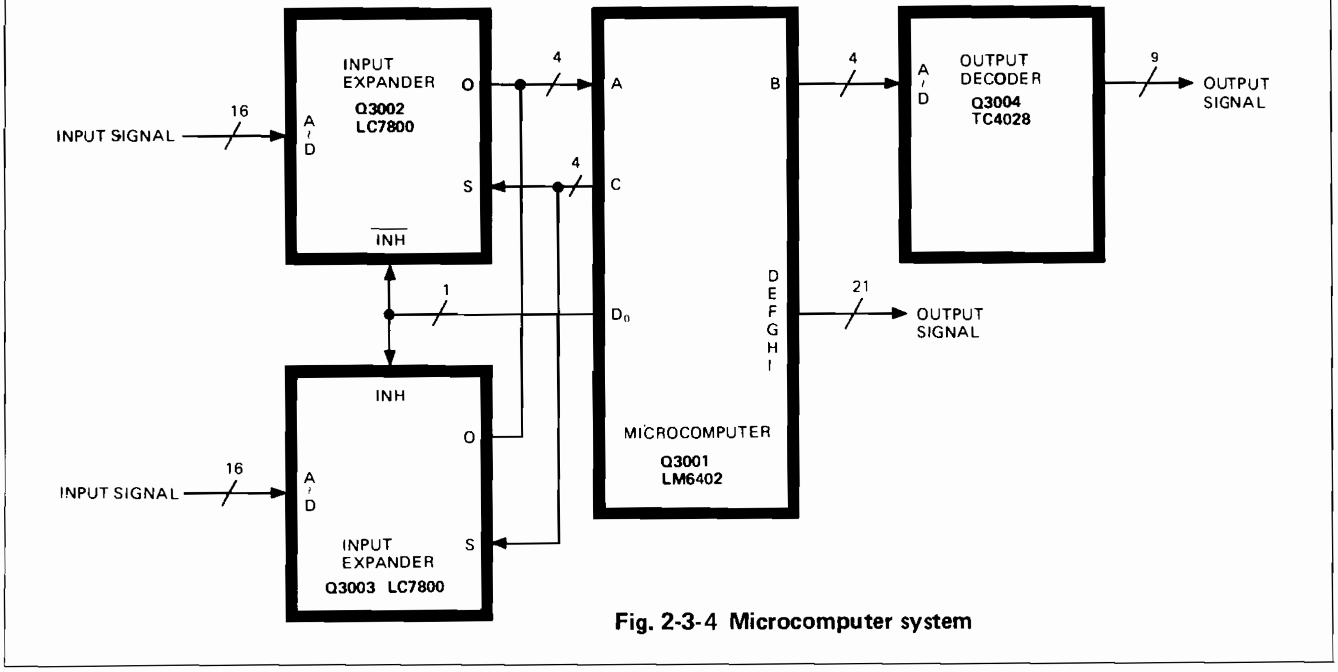

INPUT SIGNAL
16
A/D
INPUT EXPANDER
Q3002
LC7800
O
S
INH
4
A
C
4
1
D0
B
D
E
F
G
H
I
MICROCOMPUTER
Q3001
LM6402
4
A/D
OUTPUT DECODER
Q3004
TC4028
9
OUTPUT SIGNAL
21
OUTPUT SIGNAL
INPUT SIGNAL
16
A/D
INH
O
S
INPUT EXPANDER
Q3003 LC7800

Fig. 2-3-4 Microcomputer system

b. Input signals to the micrcomputer

The input signals to the input expander LC7800 (Q3002, Q3003) are shown in Fig. 2-3-5 and Fig. 2-3-6.

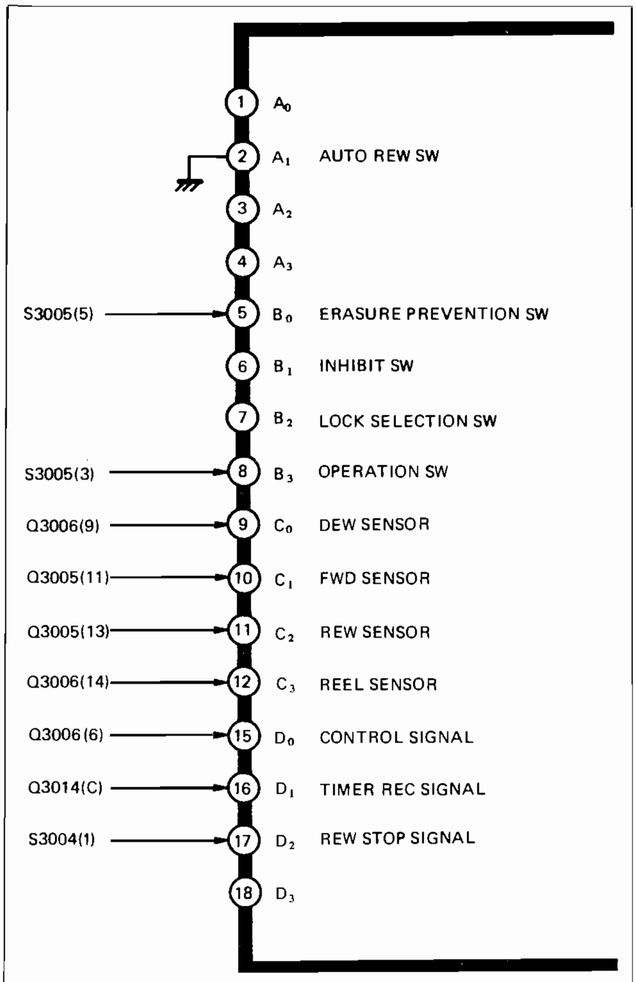

1 A0
2 A1 AUTO REW SW
3 A2
4 A3
S3005(5) → 5 B0 ERASURE PREVENTION SW
6 B1 INHIBIT SW
7 B2 LOCK SELECTION SW
S3005(3) → 8 B3 OPERATION SW
Q3006(9) → 9 C0 DEW SENSOR
Q3005(11) → 10 C1 FWD SENSOR
Q3005(13) → 11 C2 REW SENSOR
Q3006(14) → 12 C3 REEL SENSOR
Q3006(6) → 15 D0 CONTROL SIGNAL
Q3014(C) → 16 D1 TIMER REC SIGNAL
S3004(1) → 17 D2 REW STOP SIGNAL
18 D3

Fig. 2-3-5 Input Signals to Q3002 (LC7800)

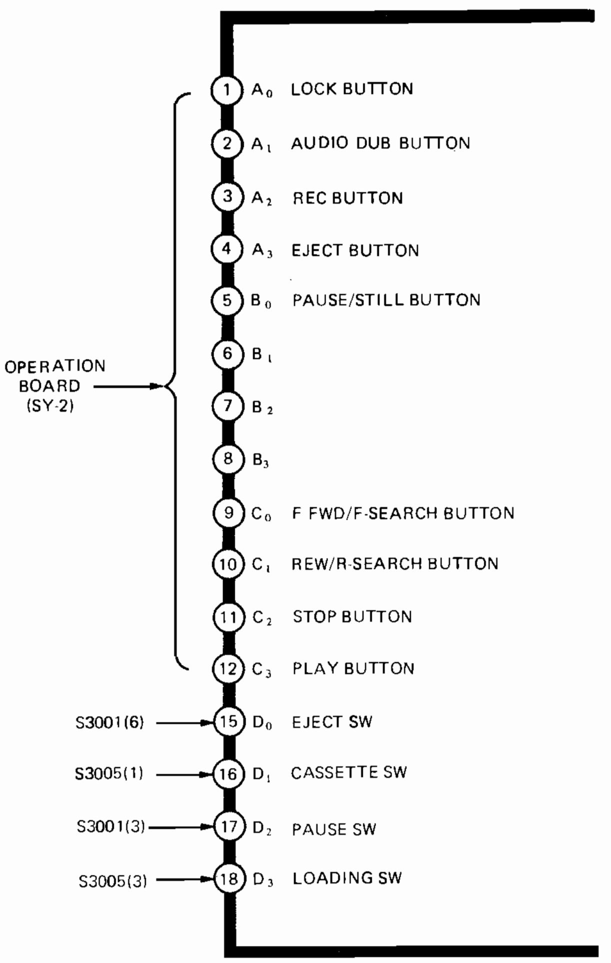

1 A0 LOCK BUTTON
2 A1 AUDIO DUB BUTTON
3 A2 REC BUTTON
4 A3 EJECT BUTTON
5 B0 PAUSE/STILL BUTTON
6 B1
OPERATION BOARD (SY-2)
7 B2
8 B3
9 C0 F FWD/F-SEARCH BUTTON
10 C1 REW/R-SEARCH BUTTON
11 C2 STOP BUTTON
12 C3 PLAY BUTTON
S3001(6) → 15 D0 EJECT SW
S3005(1) → 16 D1 CASSETTE SW
S3001(3) → 17 D2 PAUSE SW
S3005(3) → 18 D3 LOADING SW

Fig. 2-3-6 Input Signals to Q3003 (LC7800)

c. Microcomputer output signals

The output signals of LM6402 (Q3001) and TC4028 (Q3004) are shown in Table 2-3-2 and Table 2-3-3, respectively.

Video muting, audio muting, pinch-roller solenoid hold, and F FWD/REW solenoid hold signals, and also the mode signals determined by the binary signal of port B are output at "high active."

PORT	PIN NO.	OUTPUT SIGNAL
D	D0 ⑧	$\overline{\text{INPUT EXPANDER CHIP SELECTION}}$
	D1 ⑨	$\overline{\text{PINCH ROLLER SOLLENOID ATTRACTION}}$
	D2 ⑩	$\overline{\text{F FWD/REW SOLENOID ATTRACTION}}$
	D3 ⑪	
E	E0 ⑫	VIDEO MUTE
	E1 ⑬	AUDIO MUTE
	E2 ⑭	$\overline{\text{REC EE}}$
	E3 ⑮	$\overline{\text{STILL MODE}}$
F	F0 ⑯	$\overline{\text{PAUSE LED}}$
	F1 ⑰	$\overline{\text{REC LED}}$
	F2 ⑱	$\overline{\text{AUDIO DUB LED}}$
	F3 ⑲	$\overline{\text{PLAY MODE}}$
G	G0 ㉒	$\overline{\text{CAPSTAN BRAKE}}$
	G1 ㉓	$\overline{\text{REC MODE}}$
	G2 ㉔	$\overline{\text{AUDIO DUB LED}}$
	G3 ㉕	$\overline{\text{SPECIAL PLAY}}$
H	H0 ㉖	$\overline{\text{HEAD MOTOR (MH)}}$
	H1 ㉗	$\overline{\text{CAPSTAN MOTOR (Mc)}}$
	H2 ㉘	$\overline{\text{LOADING MODE}}$
	H3 ㉙	$\overline{\text{REC - PAUSE}}$
I	I0 ㉚	$\overline{\text{REEL MOTOR}}$
	I1 ㉛	PINCH ROLLER SOLENOID HOLD
	I2 ㉜	F FWD/REW SOLENOID HOLD

Table 2-3-2 Output Signals of Q3001

PORT	PIN NO.	OUTPUT SIGNAL
0	③	PAUSE MODE
1	⑭	F FWD MODE
2	②	REW MODE
3	⑮	
4	①	F-SEARCH MODE
5	⑥	R-SEARCH MODE
6	⑦	
7	④	EJECT MODE
8	⑨	UNLOADING MODE

Table 2-3-3 Output Signals of Q3004

7. The modes and the corresponding signals

Each of the modes and the corresponding signals are shown in Table 2-3-4 and Table 2-3-5.

In addition, the operation timing chart is shown in Fig. 2-3-7.

OUTPUT SIGNAL	HEAD MOTOR	CAPSTAN MOTOR	REEL MOTOR	PINCH-ROLLER SOLENOID	F FWD/REW SOLENOID	EJECT SOLENOID	LOADING MODE	UNLOADING MODE	REC-PAUSE	FWD MODE
OUTPUT PIN NO.	㉖ Q3001	㉗ Q3001	㉚ Q3001	㉛ Q3001	㉜	④	㉘	⑨	㉙	⑦ Q3004
STOP MODE										
REC, PLAY, AUDIO DUB MODE	1	1	A	B					1*	1
AUDIO DUB PAUSE MODE	1		1	1						
PAUSE MODE	1		1	1						
STILL MODE	1		1	1						
F-SEARCH MODE	1	1	A	B						
R-SEARCH MODE	1	1	B	D	C					
F FWD MODE	1		C		D					
REW MODE	1		C		D					
LOADING MODE	1		A				1			
UNLOADING MODE	1		A					1		
CASSETTE UP MODE										
EJECT MODE	1	1				1				
REMARK									REC MODE ONLY	

A: After 0.1 sec: "1"
(Remains in previous condition for 0.1 sec)
B: After 0.2 sec: "1"
(Remains in previous condition for 0.2 sec)
C: After 0.7 sec: "1"
D: After 0.5 sec: "1"
E: After 0.2 sec: "1"

The head motor, capstan motor, reel motor, LOADING mode, and REC PAUSE signals are all output at negative logic.

Table 2-3-4

OUTPUT SIGNAL	CAPSTAN BRAKE	REC MODE	PLAY MODE	STILL MODE	PAUSE MODE	F FWD MODE	REW MODE	AUDIO DUB MODE	F-SEARCH MODE	R-SEARCH MODE	PAUSE/STILL LED	REC LED	AUDIO DUB LED	VIDEO MUTE	AUDIO MUTE	REC EE MODE	SPECIAL PLAYBACK
OUTPUT PIN NO.	Q3001 ㉒	Q3001 ㉓	Q3001 ⑲	Q3001 ⑮	Q3004 ③	Q3004 ⑭	Q3004 ②	Q3001 ㉔	Q3004 ①	Q3004 ⑥	Q3001 ⑯	Q3001 ⑰	Q3001 ⑱	Q3001 ⑫	Q3001 ⑬	Q3001 ⑭	Q3001 ㉕
EJECT MODE																1	
STOP MODE																1	
REC MODE		1										1*					
PLAY MODE			1											1*	A	B	
AUDIO DUB MODE								1					1*	1*		B	
AUDIO DUB PAUSE MODE	1*			1				1			1*		1*				1
PAUSE MODE		1			1						1*	1*				1	
STILL MODE	1*		1	1							1*				A		1
F-SEARCH MODE									1						A		1
R-SEARCH MODE										1					A		1
F FWD MODE						1										1	
REW MODE							1									1	
REMARK	0.5 SECOND AFTER CHANGE TO EACH MODE: "1"										FLASHING AT 1-SECOND INTERVALS	FLASHING AT 1-SECOND INTERVALS (LOCK SW "0")	FLASHING AT 1-SECOND INTERVALS (LOCK SW "0")	CONTROL SIGNAL IS "1": "1"			

Table 2-3-5

A. AUDIO MUTE

1. 2 seconds after power supply begins: "1"
2. 0.5 second after change from REC mode to PLAY mode and REC EE changes from "1" to "0": "1"
3. 1 second after the mode changes from STILL to PLAY: "1"
4. 2 seconds after the mode changes from either F-SEARCH or R-SEARCH to PLAY: "1"
5. During STILL mode, F-SEARCH mode, or R-SEARCH mode: "1"
6. During PLAY mode, REC EE is "0", control signal is "1": 1
7. When the PAUSE button is pressed during AUD DUB Approximately 0.8 seconds after pressing the PAUSE button.

B. REC EE MODE

1. 3 seconds after reaching standard movement and LOADING mode when the mode has changed from STOP, F FWD, or REW to PLAY: "1"
2. During LOADING mode

Except for the PAUSE mode, the FF mode, the REW mode, the F-SEARCH mode, the R-SEARCH mode, video muting and audio muting, all output is done in negative logic.

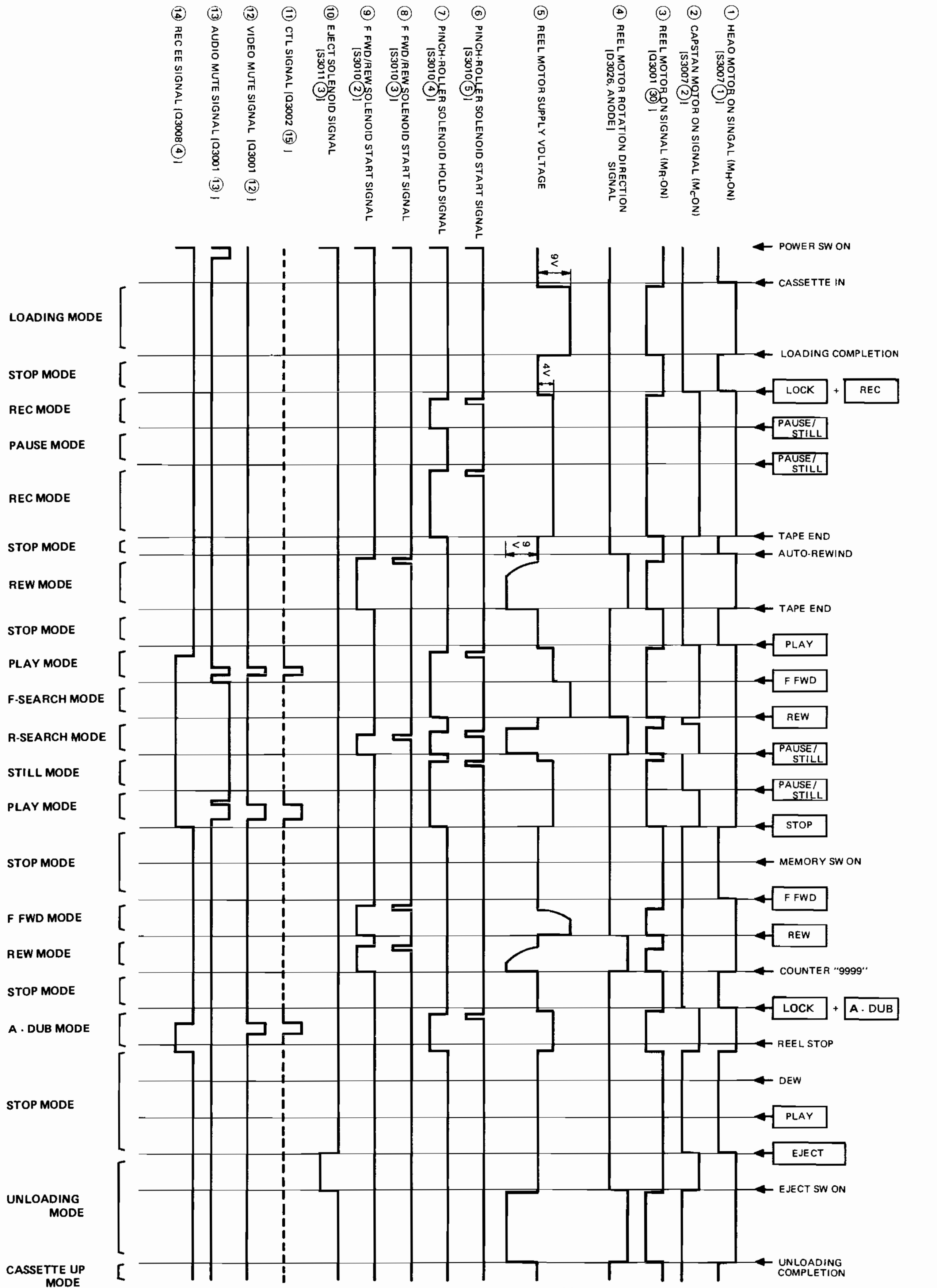

① HEAD MOTOR ON SINGAL (M_H-ON) [S3007 ①]
② CAPSTAN MOTOR ON SIGNAL (M_C-ON) [S3007 ②]
③ REEL MOTOR ON SIGNAL (M_R-ON) [Q3001 ㉚]
④ REEL MOTOR ROTATION DIRECTION SIGNAL [D3026, ANODE]
⑤ REEL MOTOR SUPPLY VOLTAGE
⑥ PINCH-ROLLER SOLENOID START SIGNAL [S3010 ⑤]
⑦ PINCH-ROLLER SOLENOID HOLD SIGNAL [S3010 ④]
⑧ F FWD/REW SOLENOID START SIGNAL [S3010 ③]
⑨ F FWD/REW SOLENOID START SIGNAL [S3010 ②]
⑩ EJECT SOLENOID SIGNAL [S3011 ③]
⑪ CTL SIGNAL [Q3002 ⑮]
⑫ VIDEO MUTE SIGNAL [Q3001 ⑫]
⑬ AUDIO MUTE SIGNAL [Q3001 ⑬]
⑭ REC EE SIGNAL [Q3008 ④]
9V
4V
9V
LOADING MODE
STOP MODE
REC MODE
PAUSE MODE
REC MODE
STOP MODE
REW MODE
STOP MODE
PLAY MODE
F-SEARCH MODE
R-SEARCH MODE
STILL MODE
PLAY MODE
STOP MODE
F FWD MODE
REW MODE
STOP MODE
A · DUB MODE
STOP MODE
UNLOADING MODE
CASSETTE UP MODE
POWER SW ON
CASSETTE IN
LOADING COMPLETION
LOCK + REC
PAUSE/STILL
PAUSE/STILL
TAPE END
AUTO-REWIND
TAPE END
PLAY
F FWD
REW
PAUSE/STILL
PAUSE/STILL
STOP
MEMORY SW ON
F FWD
REW
COUNTER "9999"
LOCK + A · DUB
REEL STOP
DEW
PLAY
EJECT
EJECT SW ON
UNLOADING COMPLETION

Fig. 2-3-7 Operation Timing Chart

8. Reel Motor Drive Circuit

The reel motor drive circuit is shown in Fig. 2-3-8.

a. REC, PLAY, PAUSE, STILL, A DUB and A DUB STAND BY modes.

The reel motor ON signal becomes LOW, Q3017 switches ON, and the voltage determined by R3051 and R3052 is supplied to the base of Q3019 through D3023 and Q3032. In addition, the current will flow in the following order: emitter of Q3019 → emitter of Q3020 → collector → reel motor → collector of Q3023 → emitter; and the reel motor will rotate in the forward direction at a speed of approximately 1,000 rpm.

b. FWD SEARCH and LOADING modes

Q3017 and Q3018 will both switch ON, and the collector voltage of Q3018 will be supplied to the collector of Q3032, Q3032 will ON, and the voltage will be supplied to base of Q3019.

In addition, the current will flow in the following order: emitter of Q3019 → emitter of Q3020 → collector → reel motor → collector of Q3023 → emitter; and the reel motor will rotate in the forward direction at a speed of 4,000 rpm.

c. UNLOADING modes

Q3017 and Q3018 will both switch ON, and the collector voltage of Q3018 will be supplied to the collector of Q3032, Q3032 will ON, and the voltage will be supplied to base of Q3019.

In addition, the current will flow in the following order: emitter of Q3019 → emitter of Q3021 → collector → reel motor → collector of Q3022 → emitter; and the reel motor will rotate in the reverse direction at a speed of 4,000 rpm.

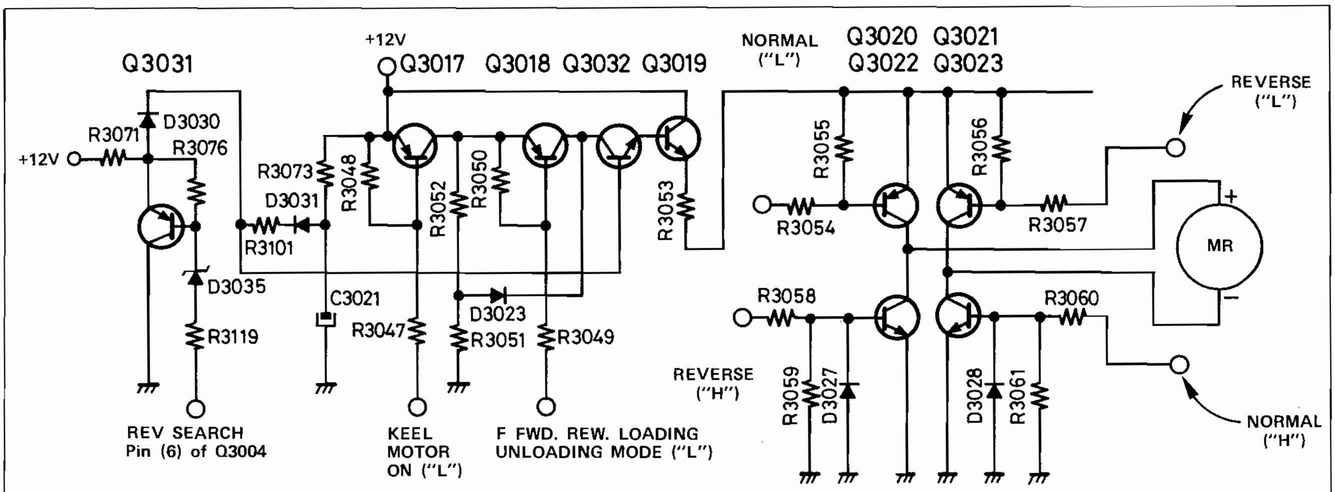

+12V
Q3031
Q3017 Q3018 Q3032 Q3019
NORMAL
("L")
Q3020 Q3021
Q3022 Q3023
REVERSE
("L")
R3071
D3030
R3076
+12V
R3073
R3048
D3031
R3101
R3052
R3050
R3053
R3055
R3056
R3054
R3057
MR
+
−
D3035
C3021
D3023
R3047
R3051
R3049
R3119
R3058
R3060
REVERSE
("H")
R3059
D3027
D3028
R3061
NORMAL
("H")
REV SEARCH
Pin (6) of Q3004
KEEL
MOTOR
ON ("L")
F FWD. REW. LOADING
UNLOADING MODE ("L")

Fig. 2-3-8 Reel motor drive circuit

d. F FWD mode

Both Q3017 and Q3018 turn ON, and the voltage from the collector of Q3018 is transmitted to the collector of Q3032. Also, in F FWD, BRAKE P START becomes LOW and L3021 discharged.

Because of this, the base voltage of Q3032 has time constant determined by R3073 and C3021, and rises. The result is that the base voltage of Q3019 also has a time constant and reises.

Current flows as follows: Q3019 E → Q3020 E → C → reel motor → Q3023 C → E; next, the reel motor moves in the forward direction at 4000 rpm.

e. REW mode

Both Q3017 and Q3018 turn ON, and the voltage from the collector of Q3018 is transmitted to the collector of Q3032. Also when REW is begun, BRAKE P START becomes LOW, and C3021 discharges. Because of this, the base voltage of Q3032 has a time constant determined by R3073 and C3021, and rises. The result is that the base voltage of Q3019 also has a time constant, and rises.

Current flows as follows: Q3019 E → Q3021 E → C → reel motor → Q3022 C → E; next, the reel motor gradually starts, and moves in a reverse direction at 4000 rpm.

f. REV SEARCH mode

Both Q3017 and Q3018 turn ON, and the voltage from the collector of Q3018 is transmitted to the collector of Q3032. Also, when REV SEARCH begins, BRAKE P START becomes LOW, and C3021 discharges. However, because pin 6 of Q3004 is HIGH, Q3031 turns OFF, and the cathode of D3030 is HIGH. Accordingly, Q3032 turns ON, and the voltage from the collector of Q3032 is transmitted to the base of Q3019.

9. Push Button Logic

BUTTON OPERATION / PREVIOUS MODE	STOP	REC + LOCK	PLAY	AUDIO DUB PAUSE + LOCK	PAUSE/ STILL	F FWD/ F-SEARCH	REW/ R-SEARCH	EJECT
STOP	—	↓ REC	↓ PLAY	↓ AUDIO DUB	—	↓ F FWD	↓ REW	UNLOADING ↓ CASSETTE UP
REC	↓ STOP	—	↓ PLAY	—	↓ PAUSE	↓ F FWD	↓ REW	STOP ↓ UNLOADING ↓ CASSETTE UP
PLAY	↓ STOP	↓ REC	—	↓ AUDIO DUB	↓ STILL	↓ F-SEARCH	STOP ↓ R-SEARCH	STOP ↓ UNLOADING ↓ CASSETTE UP
AUDIO DUB	↓ STOP	—	—	—	↓ AUDIO DUB PAUSE	↓ F-SEARCH	STOP ↓ R-SEARCH	STOP ↓ UNLOADING ↓ CASSETTE UP
PAUSE	↓ STOP	—	↓ STILL	—	↓ REC	↓ F FWD	↓ REW	STOP ↓ UNLOADING ↓ CASSETTE UP
STILL	↓ STOP	↓ PAUSE	—	↓ AUDIO DUB PAUSE	↓ PLAY	↓ F-SEARCH	↓ R-SEARCH	STOP ↓ UNLOADING ↓ CASSETTE UP
AUDIO DUB PAUSE	↓ STOP	—	↓ STILL	—	↓ AUDIO DUB	↓ F-SEARCH	↓ R-SEARCH	STOP ↓ UNLOADING ↓ CASSETTE UP
F-SEARCH	↓ STOP	—	STOP ↓ PLAY	—	STOP ↓ STILL	—	STOP ↓ R-SEARCH	STOP ↓ UNLOADING ↓ CASSETTE UP
R-SEARCH	↓ STOP	—	STOP ↓ PLAY	—	STOP ↓ STILL	—	—	STOP ↓ UNLOADING ↓ CASSETTE UP
F FWD	↓ STOP	STOP ↓ REC	STOP ↓ PLAY	—	—	—	STOP ↓ REW	STOP ↓ UNLOADING ↓ CASSETTE UP
REW	↓ STOP	STOP ↓ REC	STOP ↓ PLAY	—	—	STOP ↓ REW	—	STOP ↓ UNLOADING ↓ CASSETTE UP
CASSETTE UP	—	—	—	—	—	—	—	—
LOADING	LOADING ↓ STOP	LOADING ↓ STOP ↓ REC	LOADING ↓ STOP ↓ PLAY	LOADING ↓ STOP ↓ AUDIO DUB	—	LOADING ↓ F FWD	LOADING ↓ REW	—
UNLOADING	—	—	—	—	—	—	—	—

Table 2-3-8 Push Button Logic

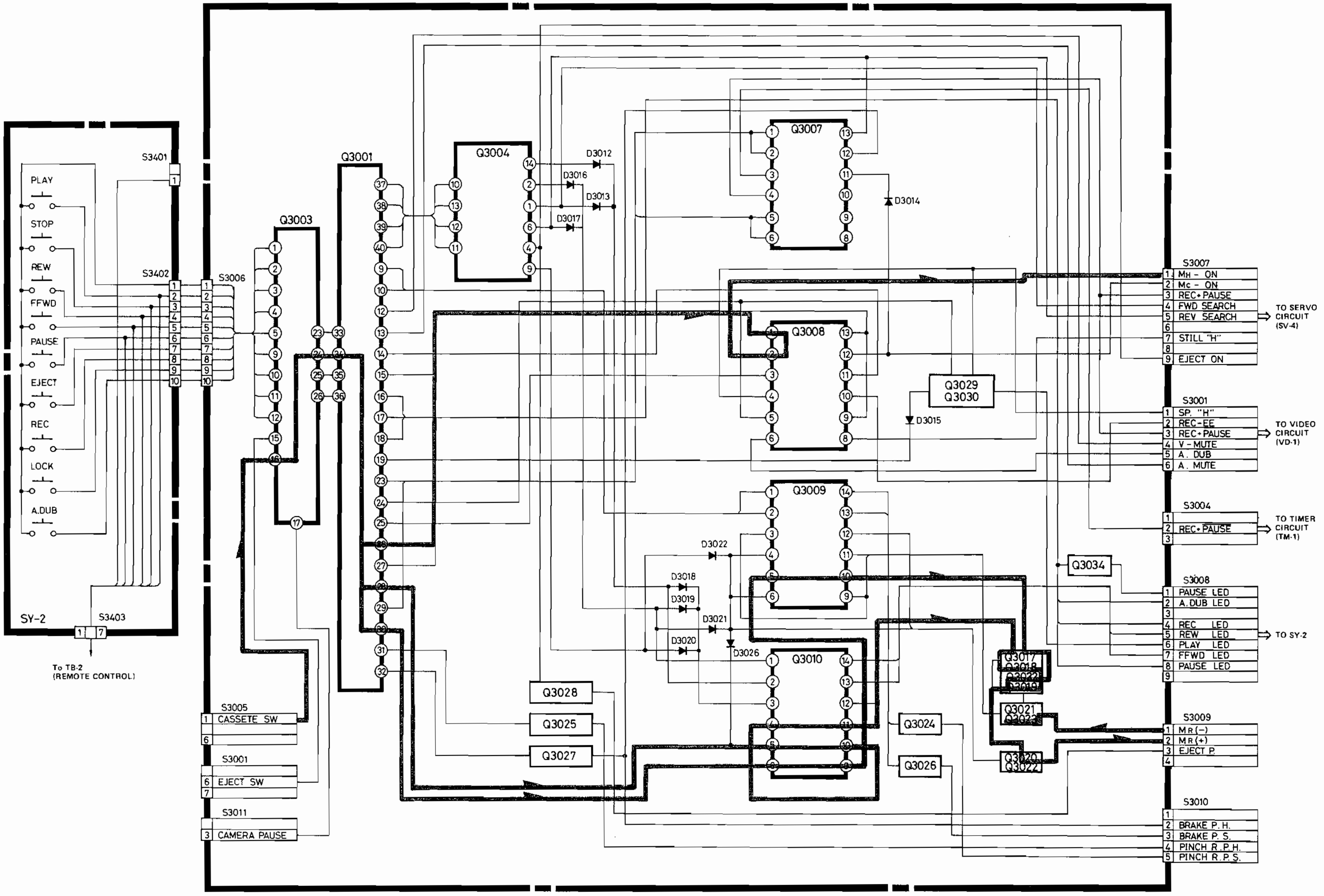

SY-2
S3401
S3402
S3403
PLAY
STOP
REW
FFWD
PAUSE
EJECT
REC
LOCK
A.DUB
To TB-2 (REMOTE CONTROL)
S3006
Q3003
Q3001
Q3004
D3012
D3016
D3013
D3017
Q3007
D3014
Q3008
Q3029 Q3030
D3015
Q3009
Q3010
D3022
D3018
D3019
D3021
D3020
D3026
Q3028
Q3025
Q3027
Q3024
Q3026
Q3034
Q3017 Q3018 Q3023 Q3019
Q3021 Q3023
Q3020 Q3022
S3005
CASSETE SW
S3001
EJECT SW
S3011
CAMERA PAUSE
S3007
1 MH - ON
2 Mc - ON
3 REC•PAUSE
4 FWD SEARCH
5 REV SEARCH
6
7 STILL "H"
8
9 EJECT ON
TO SERVO CIRCUIT (SV-4)
S3001
1 SP. "H"
2 REC-EE
3 REC•PAUSE
4 V-MUTE
5 A. DUB
6 A. MUTE
TO VIDEO CIRCUIT (VD-1)
S3004
1
2 REC•PAUSE
3
TO TIMER CIRCUIT (TM-1)
S3008
1 PAUSE LED
2 A.DUB LED
3
4 REC LED
5 REW LED
6 PLAY LED
7 FFWD LED
8 PAUSE LED
9
TO SY-2
S3009
1 MR(-)
2 MR(+)
3 EJECT P.
4
S3010
1
2 BRAKE P. H.
3 BRAKE P. S.
4 PINCH R. P.H.
5 PINCH R. P. S.

Fig. 2-3-9 System control blockdiagram (LOADING mode)

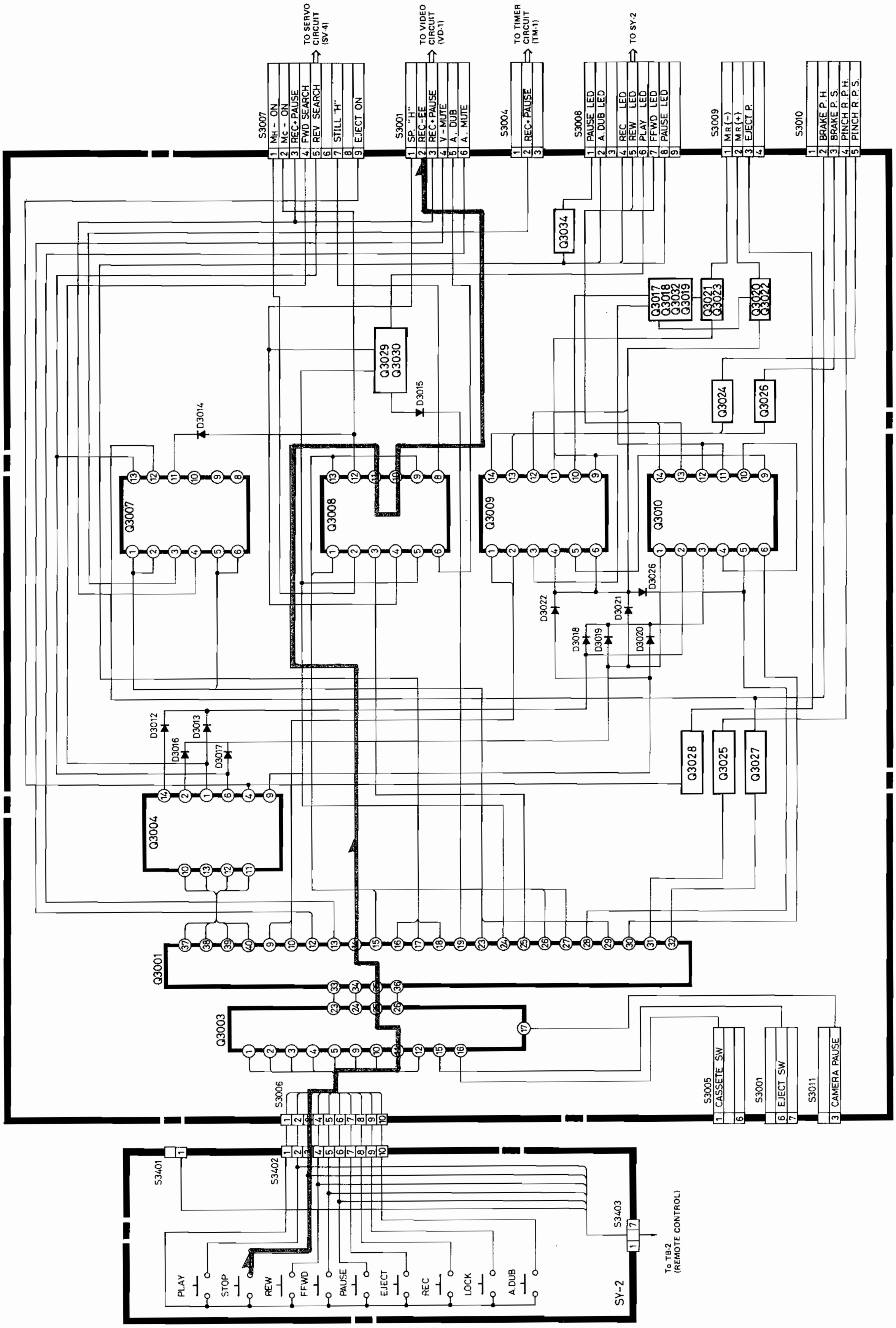

TO SERVO CIRCUIT (SV-4)
S3007
1 MH - ON
2 Mc - ON
3 REC+PAUSE
4 FWD SEARCH
5 REV SEARCH
6
7 STILL "H"
8
9 EJECT ON
TO VIDEO CIRCUIT (VD-1)
S3001
1 SP. "H"
2 REC-EE
3 REC+PAUSE
4 V-MUTE
5 A. DUB
6 A. MUTE
TO TIMER CIRCUIT (TM-1)
S3004
1
2 REC+PAUSE
3
TO SY-2
S3008
1 PAUSE LED
2 A.DUB LED
3
4 REC LED
5 REW LED
6 PLAY LED
7 FFWD LED
8 PAUSE LED
9
S3009
1 M.R.(-)
2 M.R.(+)
3 EJECT P.
4
S3010
1
2 BRAKE P. H.
3 BRAKE P. S.
4 PINCH R. P. H.
5 PINCH R. P. S.
Q3034
Q3017
Q3018
Q3032
Q3019
Q3021
Q3023
Q3020
Q3022
Q3029
Q3030
D3015
D3014
Q3024
Q3026
Q3007
Q3008
Q3009
Q3010
D3022
D3021
D3026
D3018
D3019
D3020
D3012
D3013
D3016
D3017
Q3028
Q3025
Q3027
Q3004
Q3001
Q3003
S3006
S3005
CASSETE SW
S3001
EJECT SW
S3011
CAMERA PAUSE
S3401
S3402
S3403
To TB-2 (REMOTE CONTROL)
PLAY
STOP
REW
FFWD
PAUSE
EJECT
REC
LOCK
A.DUB
SY-2

Fig. 2-3-10 System control blockdiagram (STOP mode)

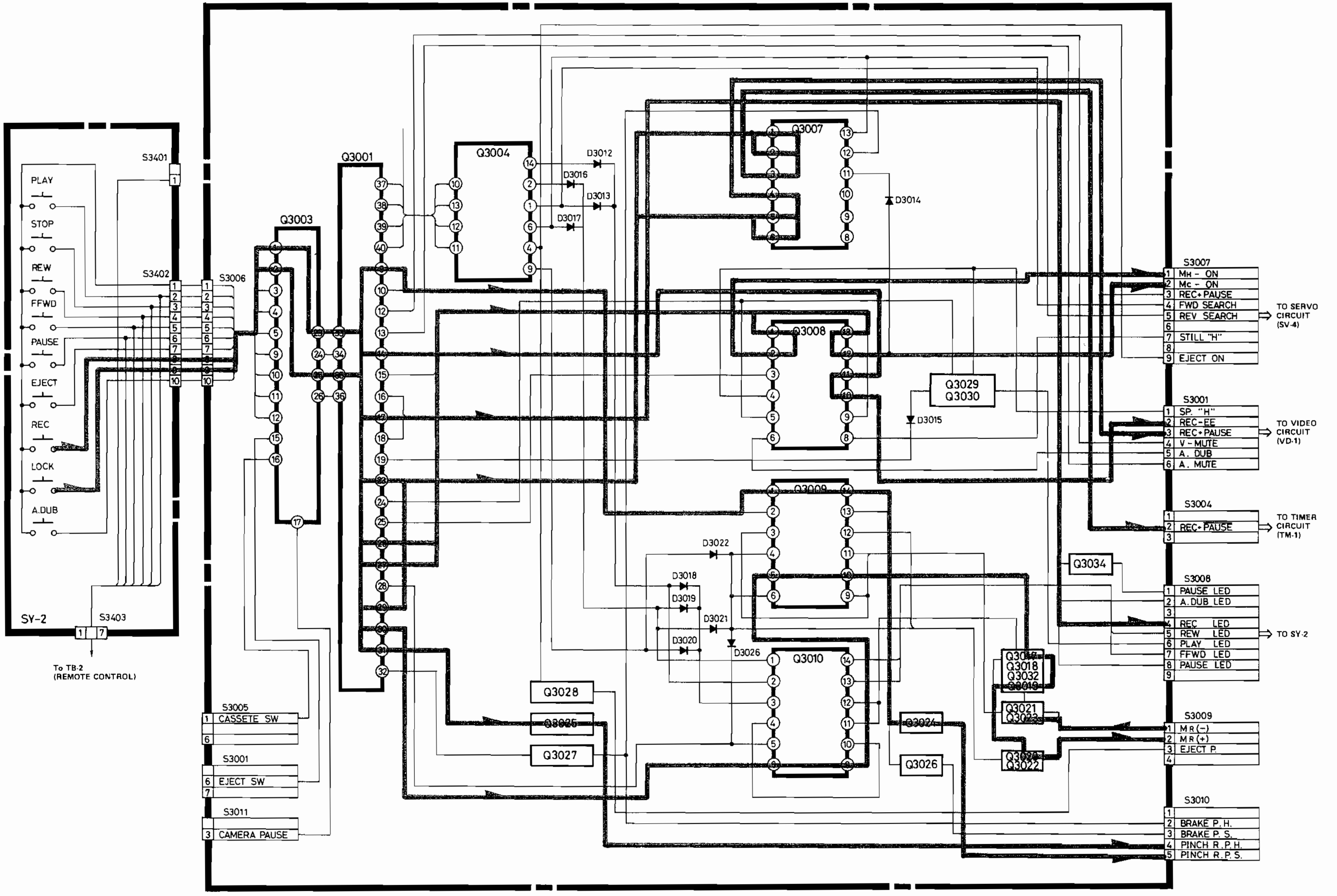

SY-2
PLAY
STOP
REW
FFWD
PAUSE
EJECT
REC
LOCK
A.DUB
S3401
S3402
S3403
To TB-2 (REMOTE CONTROL)
S3006
Q3003
Q3001
Q3004
D3012
D3013
D3016
D3017
Q3007
D3014
Q3008
Q3029
Q3030
D3015
Q3009
Q3010
D3018
D3019
D3020
D3021
D3022
D3026
Q3028
Q3025
Q3027
Q3024
Q3026
Q3034
Q3017
Q3018
Q3032
Q3019
Q3021
Q3023
Q3020
Q3022
S3005
1 CASSETE SW
6
S3001
6 EJECT SW
7
S3011
3 CAMERA PAUSE
S3007
1 MH - ON
2 Mc - ON
3 REC•PAUSE
4 FWD SEARCH
5 REV SEARCH
6
7 STILL "H"
8
9 EJECT ON
TO SERVO CIRCUIT (SV-4)
S3001
1 SP. "H"
2 REC-EE
3 REC•PAUSE
4 V-MUTE
5 A. DUB
6 A. MUTE
TO VIDEO CIRCUIT (VD-1)
S3004
1
2 REC•PAUSE
3
TO TIMER CIRCUIT (TM-1)
S3008
1 PAUSE LED
2 A.DUB LED
3
4 REC LED
5 REW LED
6 PLAY LED
7 FFWD LED
8 PAUSE LED
9
TO SY-2
S3009
1 MR(-)
2 MR(+)
3 EJECT P.
4
S3010
1
2 BRAKE P.H.
3 BRAKE P.S.
4 PINCH R.P.H.
5 PINCH R.P.S.

Fig. 2-3-11 System control blockdiagram (REC mode)

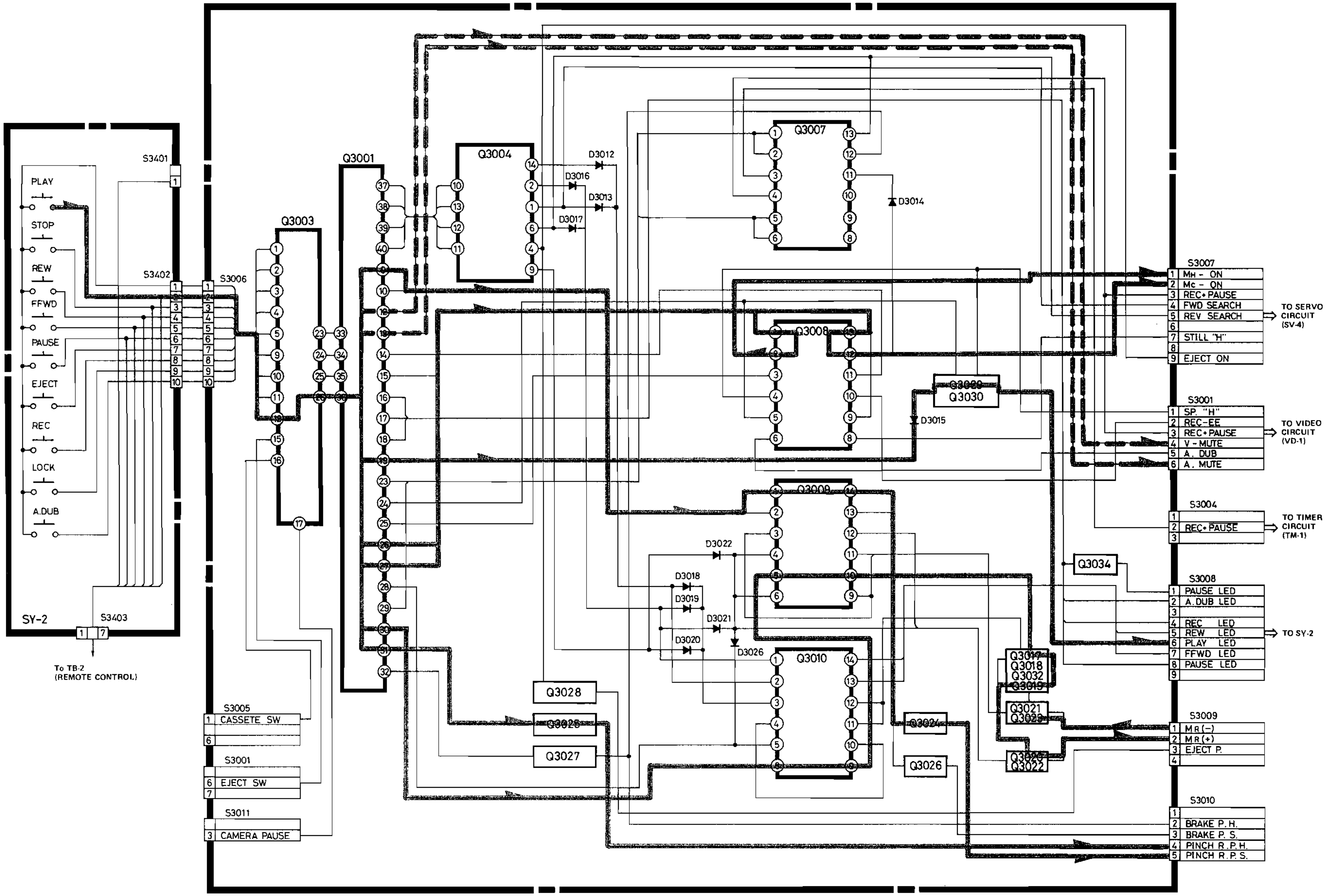

SY-2
PLAY
STOP
REW
FFWD
PAUSE
EJECT
REC
LOCK
A.DUB
S3401
S3402
S3403
To TB-2
(REMOTE CONTROL)
S3006
Q3003
Q3001
Q3004
D3012
D3016
D3013
D3017
Q3007
D3014
Q3008
Q3009
Q3010
Q3029
Q3030
D3015
D3022
D3018
D3019
D3021
D3020
D3026
Q3028
Q3025
Q3027
Q3034
Q3017
Q3018
Q3032
Q3019
Q3021
Q3023
Q3020
Q3022
Q3024
Q3026
S3005
1 CASSETE SW
6
S3001
6 EJECT SW
7
S3011
3 CAMERA PAUSE
S3007
1 MH - ON
2 Mc - ON
3 REC•PAUSE
4 FWD SEARCH
5 REV SEARCH
6
7 STILL "H"
8
9 EJECT ON
TO SERVO CIRCUIT (SV-4)
S3001
1 SP "H"
2 REC-EE
3 REC•PAUSE
4 V-MUTE
5 A. DUB
6 A. MUTE
TO VIDEO CIRCUIT (VD-1)
S3004
1
2 REC•PAUSE
3
TO TIMER CIRCUIT (TM-1)
S3008
1 PAUSE LED
2 A.DUB LED
3
4 REC LED
5 REW LED
6 PLAY LED
7 FFWD LED
8 PAUSE LED
9
TO SY-2
S3009
1 MR(-)
2 MR(+)
3 EJECT P.
4
S3010
1
2 BRAKE P.H.
3 BRAKE P.S.
4 PINCH R.P.H.
5 PINCH R.P.S.

Fig. 2-3-12 System control blockdiagram (PLAY mode)

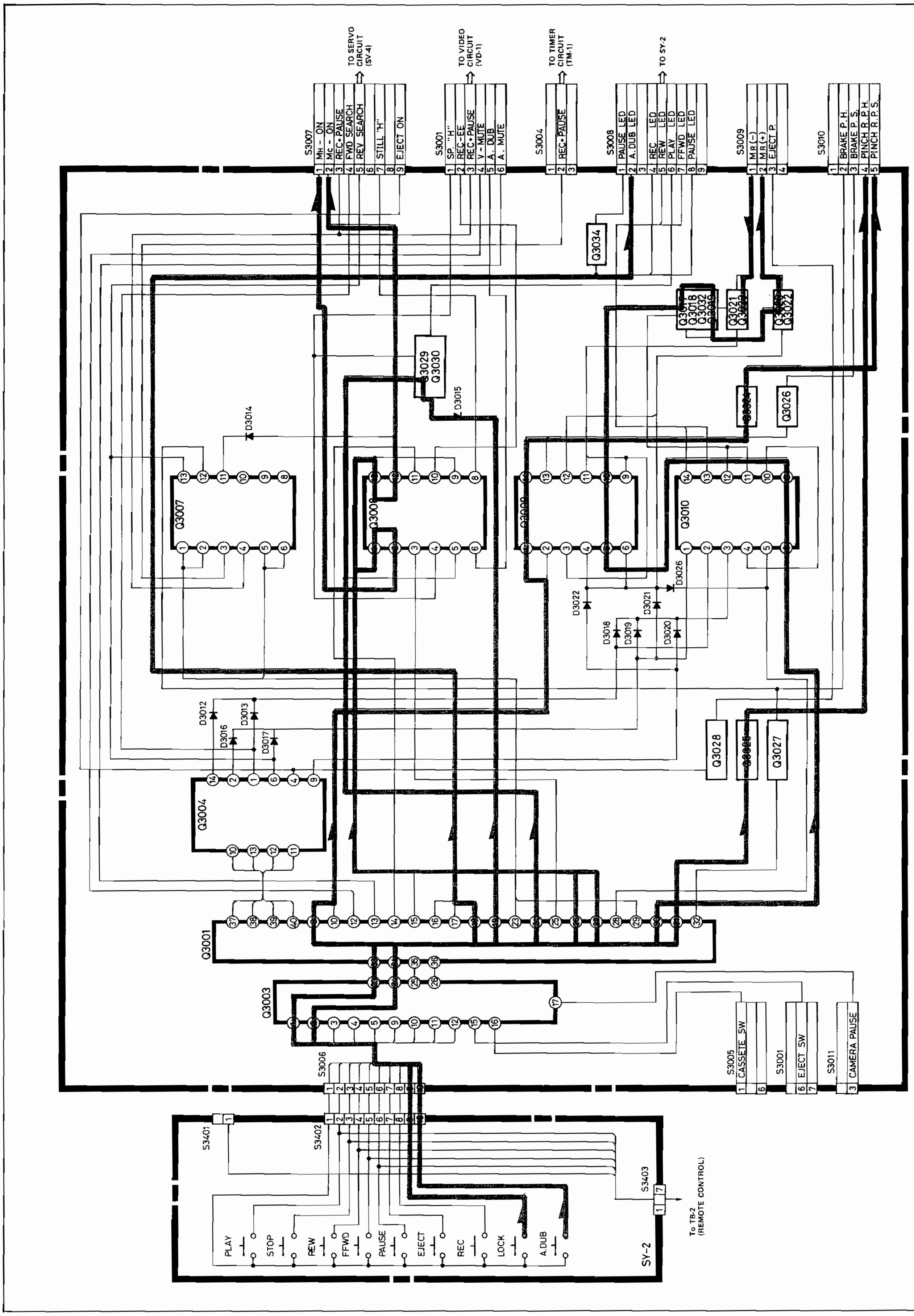

S3007
1 MH - ON
2 MC - ON
3 REC+PAUSE
4 FWD SEARCH
5 REV SEARCH
6
7 STILL "H"
8
9 EJECT ON
TO SERVO CIRCUIT (SV-4)
S3001
1 SP. "H"
2 REC-EE
3 REC+PAUSE
4 V - MUTE
5 A. DUB
6 A. MUTE
TO VIDEO CIRCUIT (VD-1)
S3004
1
2 REC+PAUSE
3
TO TIMER CIRCUIT (TM-1)
S3008
1 PAUSE LED
2 A.DUB LED
3
4 REC LED
5 REW LED
6 PLAY LED
7 FFWD LED
8 PAUSE LED
9
TO SY-2
S3009
1 MR(-)
2 MR(+)
3 EJECT P.
4
S3010
1
2 BRAKE P. H.
3 BRAKE P. S.
4 PINCH R. P. H.
5 PINCH R. P. S.
Q3034
Q3017
Q3018
Q3032
Q3033
Q3021
Q3020
Q3023
Q3022
Q3029
Q3030
D3015
D3014
Q3024
Q3026
Q3007
Q3009
Q3008
Q3010
D3022
D3018
D3019
D3021
D3020
D3026
D3012
D3013
D3016
D3017
Q3004
Q3028
Q3025
Q3027
Q3001
Q3003
S3006
S3005
1 CASSETE SW
6
S3001
6 EJECT SW
7
S3011
3 CAMERA PAUSE
S3401
S3402
S3403
To TB-2 (REMOTE CONTROL)
PLAY
STOP
REW
FFWD
PAUSE
EJECT
REC
LOCK
A.DUB
SY-2

Fig. 2-3-13 System control blockdiagram (AUD. DUB mode)

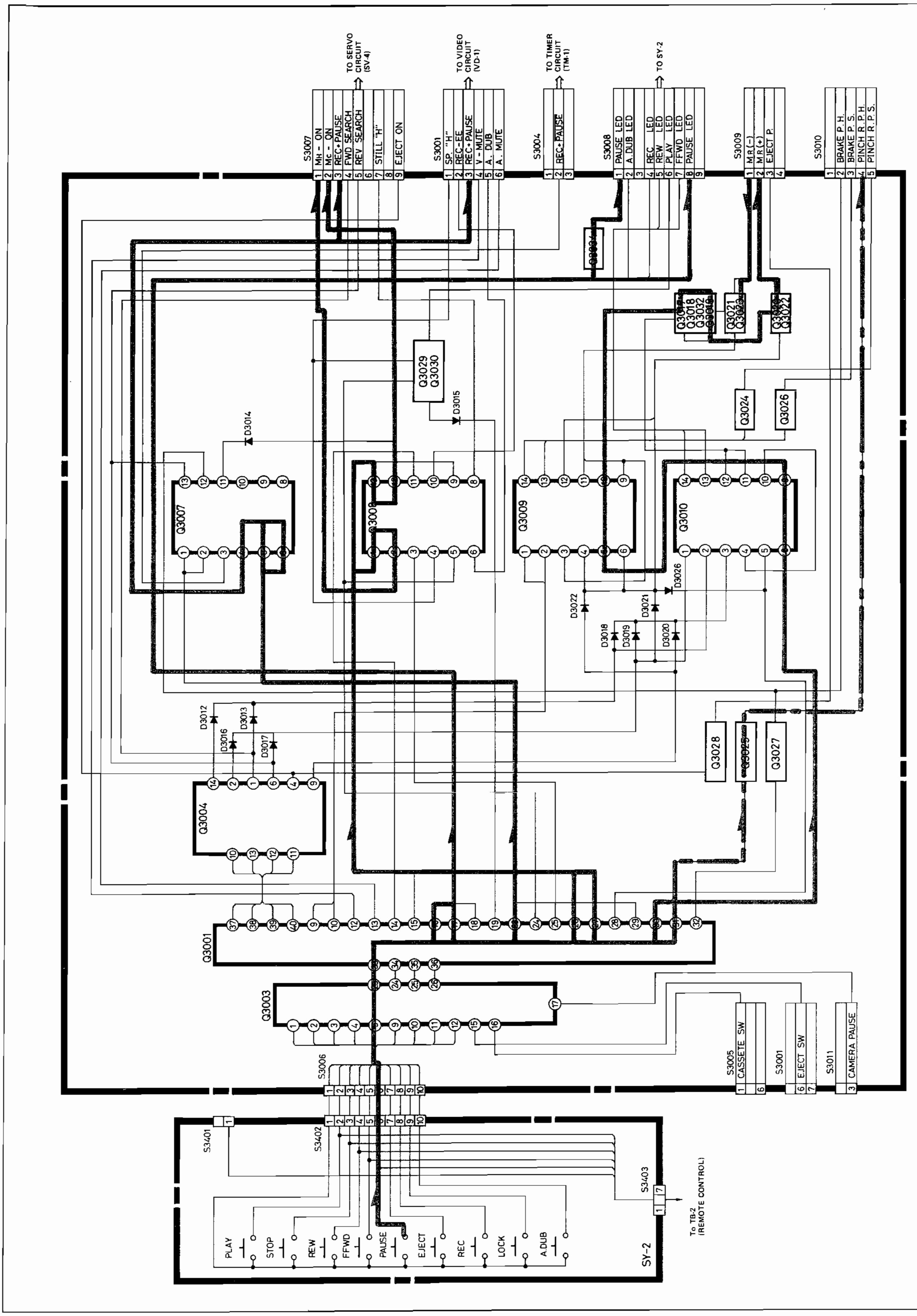

S3007
1 Mн - ON
2 Mc - ON
3 REC+PAUSE
4 FWD SEARCH
5 REV SEARCH
6
7 STILL "H"
8
9 EJECT ON
TO SERVO CIRCUIT (SV-4)
S3001
1 SP. "H"
2 REC-EE
3 REC+PAUSE
4 V - MUTE
5 A. DUB
6 A. MUTE
TO VIDEO CIRCUIT (VD-1)
S3004
1
2 REC+PAUSE
3
TO TIMER CIRCUIT (TM-1)
S3008
1 PAUSE LED
2 A.DUB LED
3
4 REC LED
5 REW LED
6 PLAY LED
7 FFWD LED
8 PAUSE LED
9
TO SY-2
S3009
1 M.R.(-)
2 M.R.(+)
3 EJECT P.
4
S3010
1
2 BRAKE P. H.
3 BRAKE P. S.
4 PINCH R. P. H.
5 PINCH R. P. S.
Q3031
Q3016
Q3018
Q3032
Q3019
Q3021
Q3023
Q3020
Q3022
Q3029
Q3030
D3015
Q3024
Q3026
D3014
Q3007
Q3008
Q3009
Q3010
D3022
D3026
D3021
D3018
D3019
D3020
D3012
D3013
D3016
D3017
Q3028
Q3025
Q3027
Q3004
Q3001
Q3003
S3006
S3005
1 CASSETE SW
6
S3001
6 EJECT SW
7
S3011
3 CAMERA PAUSE
S3401
S3402
S3403
To TB-2 (REMOTE CONTROL)
PLAY
STOP
REW
FFWD
PAUSE
EJECT
REC
LOCK
A.DUB
SY-2

Fig. 2-3-14 System control blockdiagram (PAUSE mode)

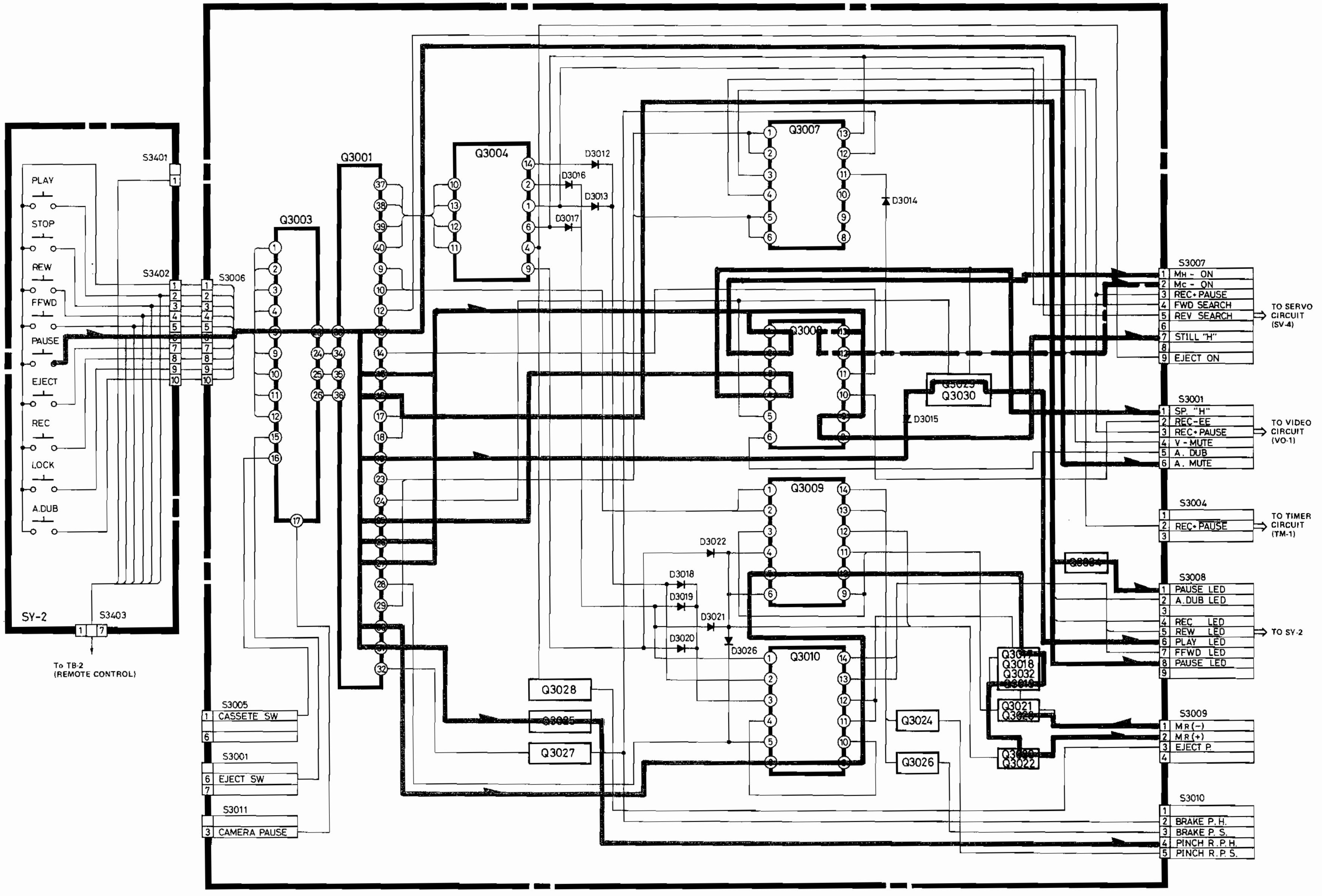

SY-2
PLAY
STOP
REW
FFWD
PAUSE
EJECT
REC
LOCK
A.DUB
S3401
S3402
S3403
To TB-2 (REMOTE CONTROL)
S3006
Q3003
Q3001
Q3004
Q3007
Q3008
Q3009
Q3010
Q3023
Q3030
Q3024
Q3026
Q3028
Q3025
Q3027
Q3017
Q3018
Q3032
Q3019
Q3021
Q3020
Q3022
Q3031
Q3034
D3012
D3013
D3014
D3015
D3016
D3017
D3018
D3019
D3020
D3021
D3022
D3026
S3005
1 CASSETE SW
6
S3001
6 EJECT SW
7
S3011
3 CAMERA PAUSE
S3007
1 MH - ON
2 Mc - ON
3 REC+PAUSE
4 FWD SEARCH
5 REV SEARCH
6
7 STILL "H"
8
9 EJECT ON
TO SERVO CIRCUIT (SV-4)
S3001
1 SP. "H"
2 REC-EE
3 REC+PAUSE
4 V - MUTE
5 A. DUB
6 A. MUTE
TO VIDEO CIRCUIT (VO-1)
S3004
1
2 REC+PAUSE
3
TO TIMER CIRCUIT (TM-1)
S3008
1 PAUSE LED
2 A.DUB LED
3
4 REC LED
5 REW LED
6 PLAY LED
7 FFWD LED
8 PAUSE LED
9
TO SY-2
S3009
1 MR(-)
2 MR(+)
3 EJECT P.
4
S3010
1
2 BRAKE P.H.
3 BRAKE P.S.
4 PINCH R.P.H.
5 PINCH R.P.S.

Fig. 2-3-15 System control blockdiagram (STILL mode)

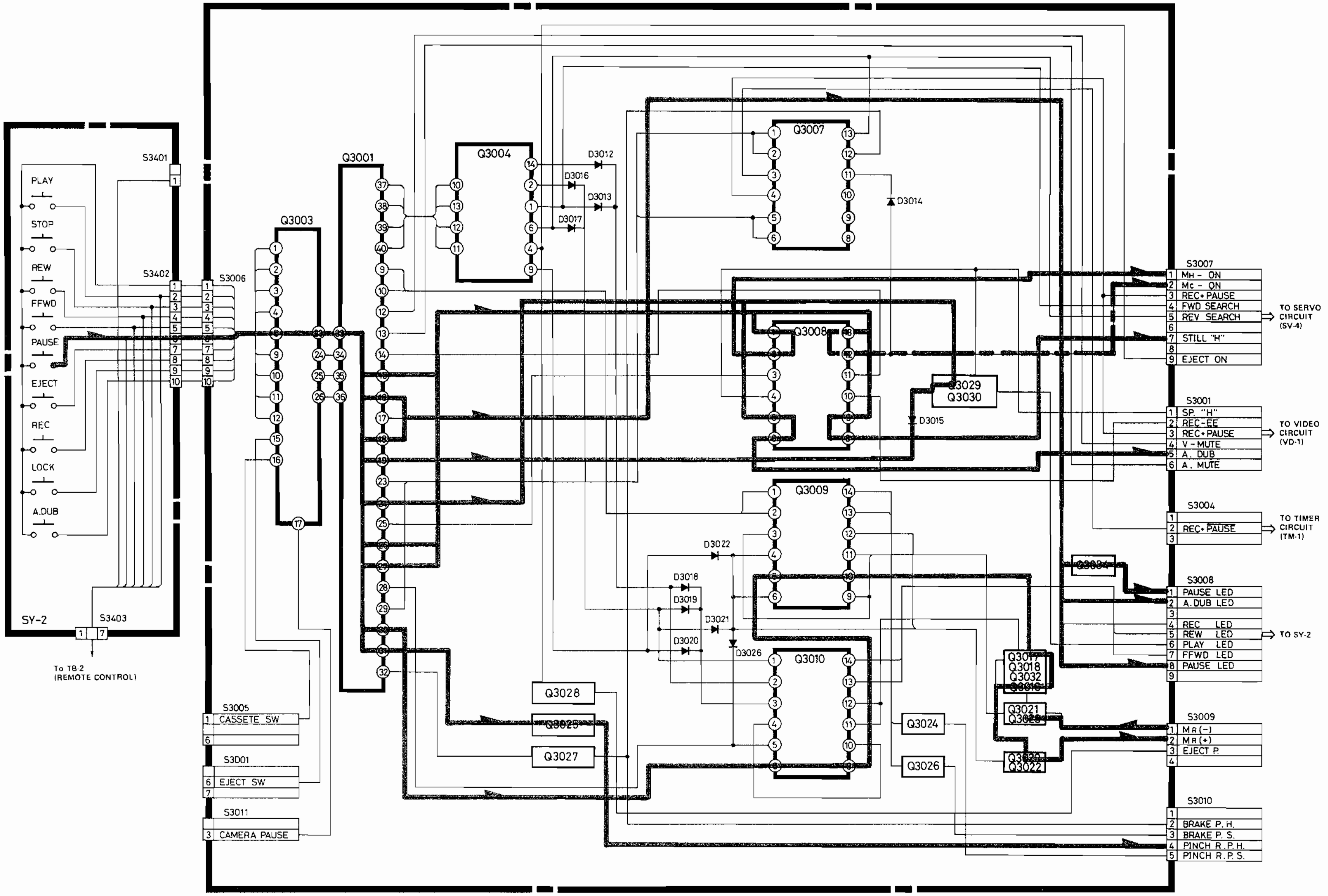

SY-2
S3401
S3402
S3403
PLAY
STOP
REW
FFWD
PAUSE
EJECT
REC
LOCK
A.DUB
To TB-2 (REMOTE CONTROL)
S3006
Q3003
Q3001
Q3004
D3012
D3016
D3013
D3017
Q3007
D3014
Q3008
Q3029
Q3030
D3015
Q3009
Q3010
D3022
D3018
D3019
D3021
D3020
D3026
Q3028
Q3025
Q3027
Q3024
Q3026
Q3034
Q3017
Q3018
Q3032
Q3019
Q3021
Q3023
Q3020
Q3022
S3005
CASSETE SW
S3D01
EJECT SW
S3011
CAMERA PAUSE
S3007
MH - ON
Mc - ON
REC+PAUSE
FWD SEARCH
REV SEARCH
STILL "H"
EJECT ON
TO SERVO CIRCUIT (SV-4)
S3001
SP. "H"
REC-EE
REC+PAUSE
V-MUTE
A. DUB
A. MUTE
TO VIDEO CIRCUIT (VD-1)
S3004
REC+PAUSE
TO TIMER CIRCUIT (TM-1)
S3008
PAUSE LED
A.DUB LED
REC LED
REW LED
PLAY LED
FFWD LED
PAUSE LED
TO SY-2
S3009
MR(-)
MR(+)
EJECT P.
S3010
BRAKE P. H.
BRAKE P. S.
PINCH R. P. H.
PINCH R. P. S.

Fig. 2-3-16 System Control blockdiagram (AUD. DUB, STANDBY mode)

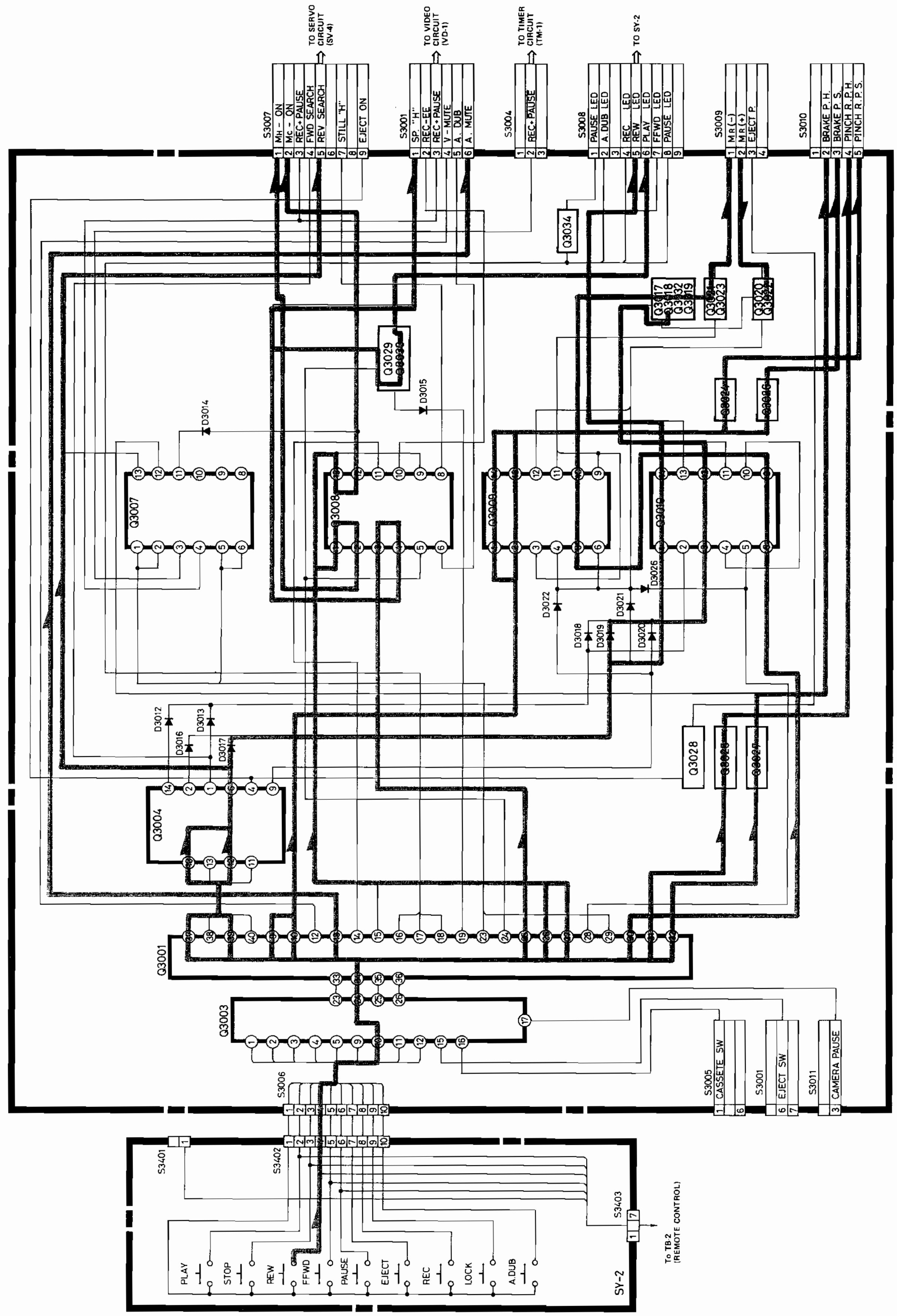

TO SERVO CIRCUIT (SV-4)
TO VIDEO CIRCUIT (VD-1)
TO TIMER CIRCUIT (TM-1)
TO SY-2
S3007
1 MH - ON
2 Mc - ON
3 REC+PAUSE
4 FWD SEARCH
5 REV SEARCH
6
7 STILL "H"
8
9 EJECT ON
S3001
1 SP. "H"
2 REC-EE
3 REC+PAUSE
4 V-MUTE
5 A. DUB
6 A. MUTE
S3004
1
2 REC+PAUSE
3
S3008
1 PAUSE LED
2 A.DUB LED
3
4 REC LED
5 REW LED
6 PLAY LED
7 FFWD LED
8 PAUSE LED
9
S3009
1 MR(-)
2 MR(+)
3 EJECT P.
4
S3010
1
2 BRAKE P.H.
3 BRAKE P.S.
4 PINCH R.P.H.
5 PINCH R.P.S.
Q3034
Q3017
Q3018
Q3032
Q3019
Q3021
Q3023
Q3020
Q3022
Q3029
Q3030
D3015
Q3024
Q3026
D3014
Q3007
Q3008
Q3009
Q3010
D3022
D3026
D3021
D3018
D3019
D3020
D3012
D3016
D3013
D3017
Q3028
Q3025
Q3027
Q3004
Q3001
Q3003
S3006
S3005
1 CASSETE SW
6
S3001
6 EJECT SW
7
S3011
3 CAMERA PAUSE
S3401
S3402
S3403
To TB.2 (REMOTE CONTROL)
PLAY
STOP
REW
FFWD
PAUSE
EJECT
REC
LOCK
A.DUB
SY-2

Fig. 2-3-17 System control blockdiagram (REV SEARCH mode)

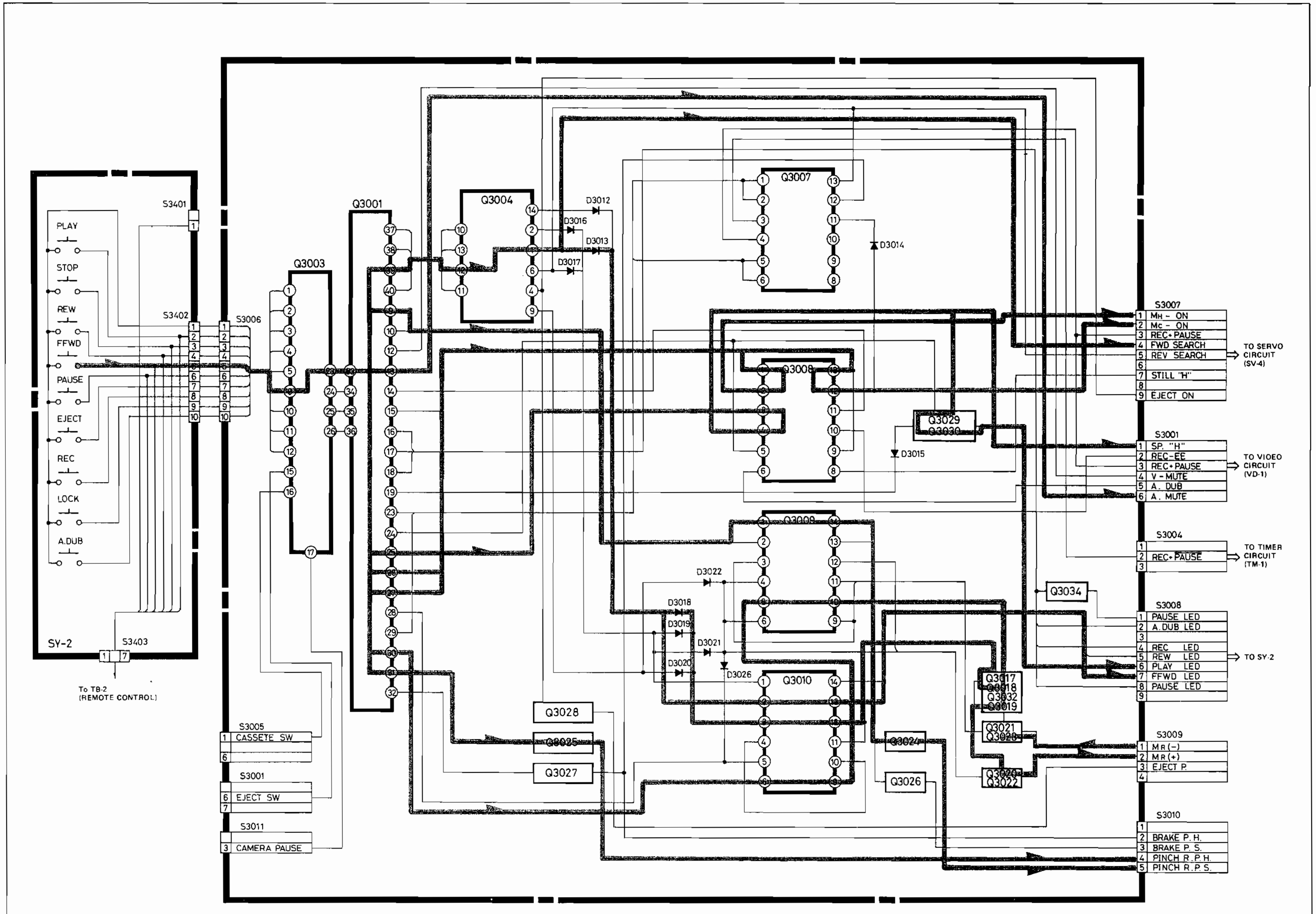

SY-2
S3401
S3402
S3403
PLAY
STOP
REW
FFWD
PAUSE
EJECT
REC
LOCK
A.DUB
To TB-2 (REMOTE CONTROL)
S3006
Q3003
Q3001
Q3004
Q3007
Q3008
Q3009
Q3010
Q3029
Q3030
Q3034
Q3017
Q3018
Q3032
Q3019
Q3021
Q3028
Q3020
Q3022
Q3024
Q3026
Q3028
Q3025
Q3027
D3012
D3013
D3014
D3015
D3016
D3017
D3018
D3019
D3020
D3021
D3022
D3026
S3005
1 CASSETE SW
S3001
6 EJECT SW
S3011
3 CAMERA PAUSE
S3007
1 MH - ON
2 MC - ON
3 REC+PAUSE
4 FWD SEARCH
5 REV SEARCH
7 STILL "H"
9 EJECT ON
TO SERVO CIRCUIT (SV-4)
S3001
1 SP. "H"
2 REC-EE
3 REC+PAUSE
4 V-MUTE
5 A. DUB
6 A. MUTE
TO VIDEO CIRCUIT (VD-1)
S3004
2 REC+PAUSE
TO TIMER CIRCUIT (TM-1)
S3008
1 PAUSE LED
2 A.DUB LED
4 REC LED
5 REW LED
6 PLAY LED
7 FFWD LED
8 PAUSE LED
TO SY-2
S3009
1 MR(-)
2 MR(+)
3 EJECT P.
S3010
2 BRAKE P.H.
3 BRAKE P.S.
4 PINCH R.P.H.
5 PINCH R.P.S.

Fig. 2-3-18 System control blockdiagram (FWD SEARCH mode)

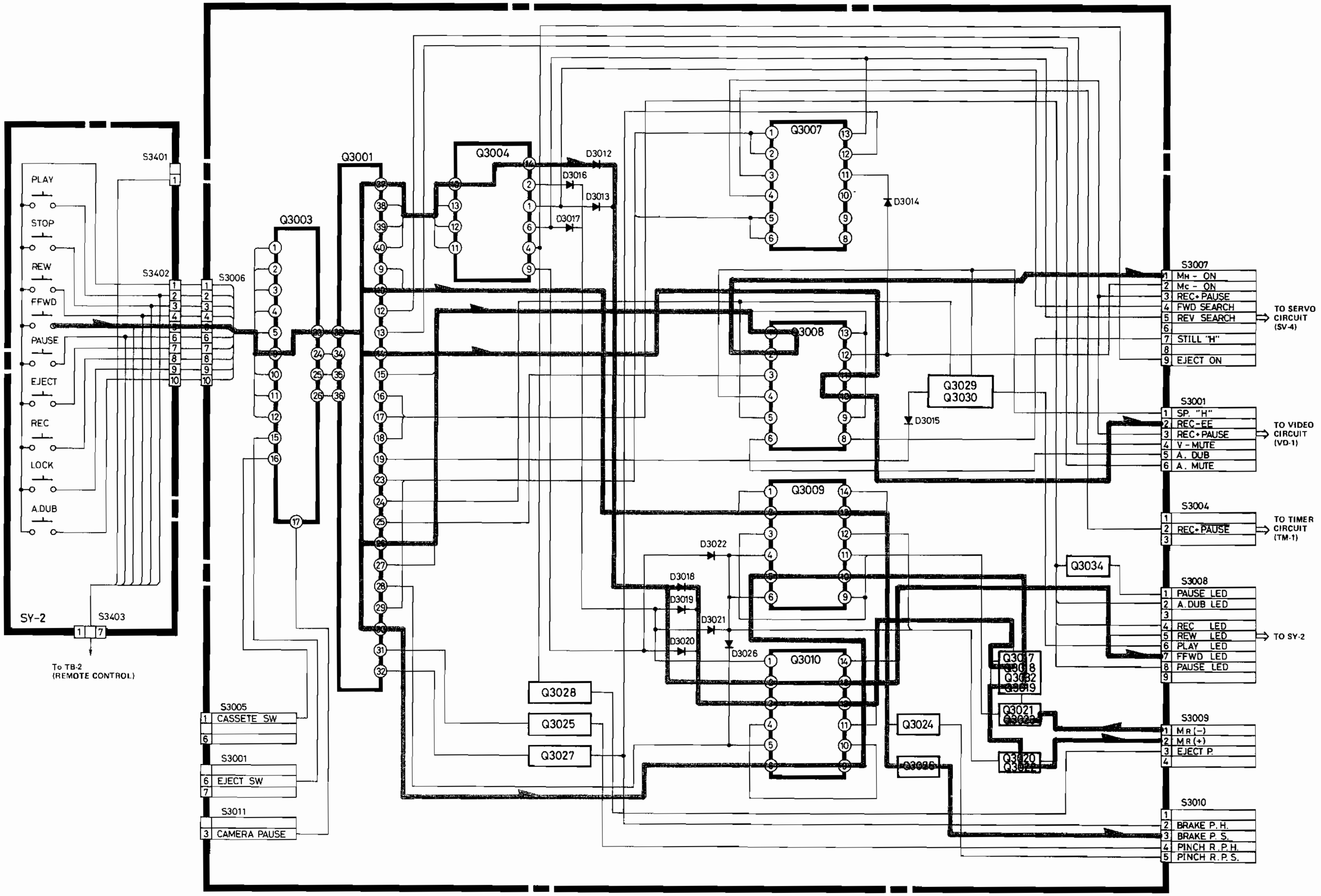

SY-2
PLAY
STOP
REW
FFWD
PAUSE
EJECT
REC
LOCK
A.DUB
S3401
S3402
S3403
To TB-2 (REMOTE CONTROL)
S3006
Q3003
Q3001
Q3004
Q3007
Q3008
Q3009
Q3010
Q3029 Q3030
Q3034
Q3024
Q3026
Q3028
Q3025
Q3027
D3012
D3013
D3014
D3015
D3016
D3017
D3018
D3019
D3020
D3021
D3022
D3026
S3005
CASSETE SW
S3001
EJECT SW
S3011
CAMERA PAUSE
S3007
MH - ON
MC - ON
REC+PAUSE
FWD SEARCH
REV SEARCH
STILL "H"
EJECT ON
TO SERVO CIRCUIT (SV-4)
S3001
SP. "H"
REC-EE
REC+PAUSE
V-MUTE
A. DUB
A. MUTE
TO VIDEO CIRCUIT (VD-1)
S3004
REC+PAUSE
TO TIMER CIRCUIT (TM-1)
S3008
PAUSE LED
A.DUB LED
REC LED
REW LED
PLAY LED
FFWD LED
PAUSE LED
TO SY-2
S3009
MR(-)
MR(+)
EJECT P.
S3010
BRAKE P.H.
BRAKE P.S.
PINCH R.P.H.
PINCH R.P.S.

Fig. 2-3-19 System control blockdiagram (F FWD mode)

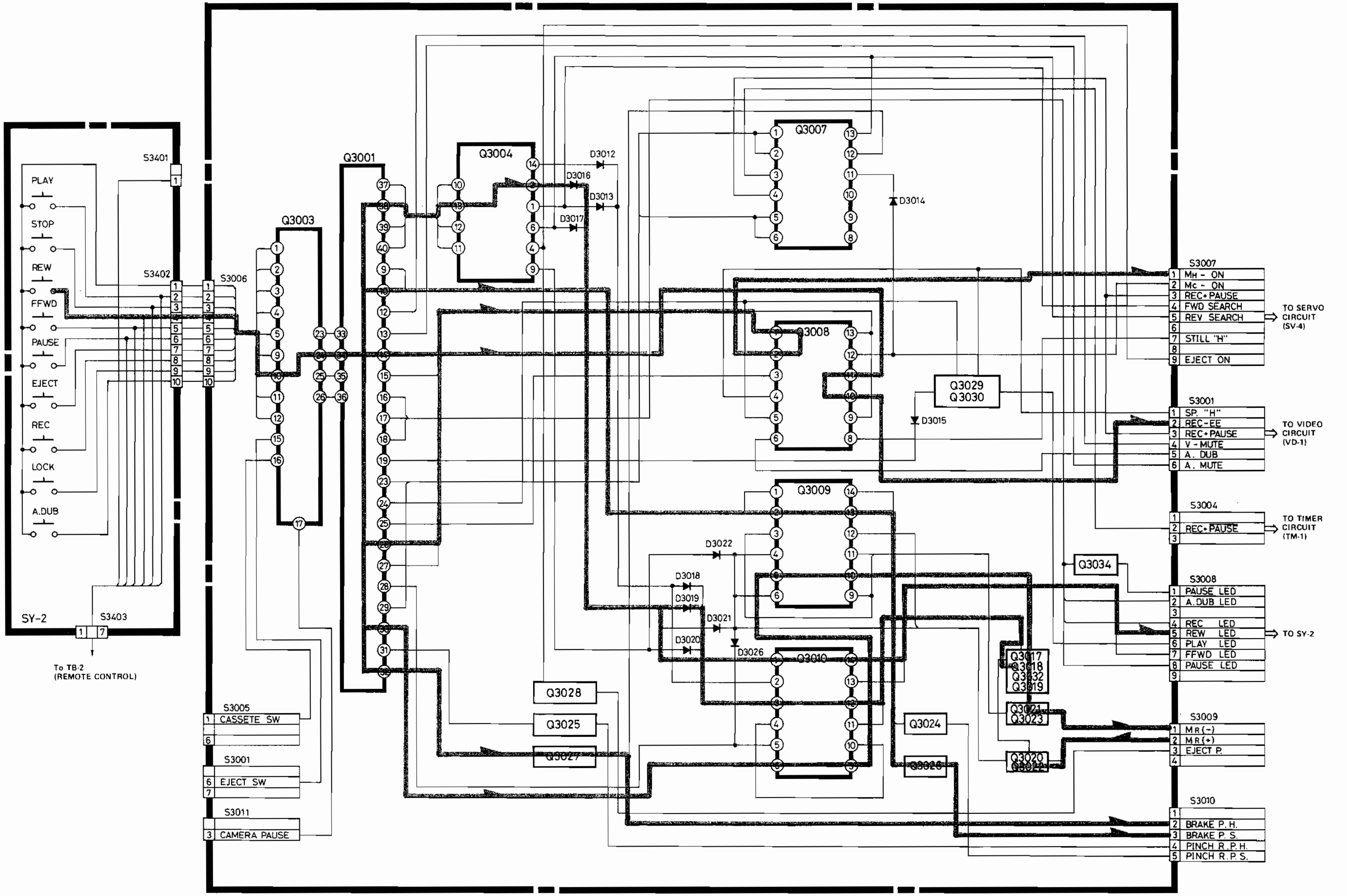

SY-2
S3401
S3402
S3403
PLAY
STOP
REW
FFWD
PAUSE
EJECT
REC
LOCK
A.DUB
To TB-2 (REMOTE CONTROL)
S3006
Q3003
Q3001
Q3004
Q3007
Q3008
Q3009
Q3010
Q3029 Q3030
Q3034
Q3017 Q3018 Q3032 Q3019
Q3021 Q3023
Q3020 Q3022
Q3024
Q3026
Q3028
Q3025
Q3027
D3012
D3013
D3014
D3015
D3016
D3017
D3018
D3019
D3020
D3021
D3022
D3026
S3005
1 CASSETE SW
6
S3001
6 EJECT SW
7
S3011
3 CAMERA PAUSE
S3007
1 MH - ON
2 Mc - ON
3 REC+PAUSE
4 FWD SEARCH
5 REV SEARCH
6
7 STILL "H"
8
9 EJECT ON
TO SERVO CIRCUIT (SV-4)
S3001
1 SP. "H"
2 REC-EE
3 REC+PAUSE
4 V-MUTE
5 A. DUB
6 A. MUTE
TO VIDEO CIRCUIT (VD-1)
S3004
1
2 REC+PAUSE
3
TO TIMER CIRCUIT (TM-1)
S3008
1 PAUSE LED
2 A.DUB LED
3
4 REC LED
5 REW LED
6 PLAY LED
7 FFWD LED
8 PAUSE LED
9
TO SY-2
S3009
1 MR(-)
2 MR(+)
3 EJECT P.
4
S3010
1
2 BRAKE P.H.
3 BRAKE P.S.
4 PINCH R.P.H.
5 PINCH R.P.S.

Fig. 2-3-20 System control blockdiagram (REW mode)

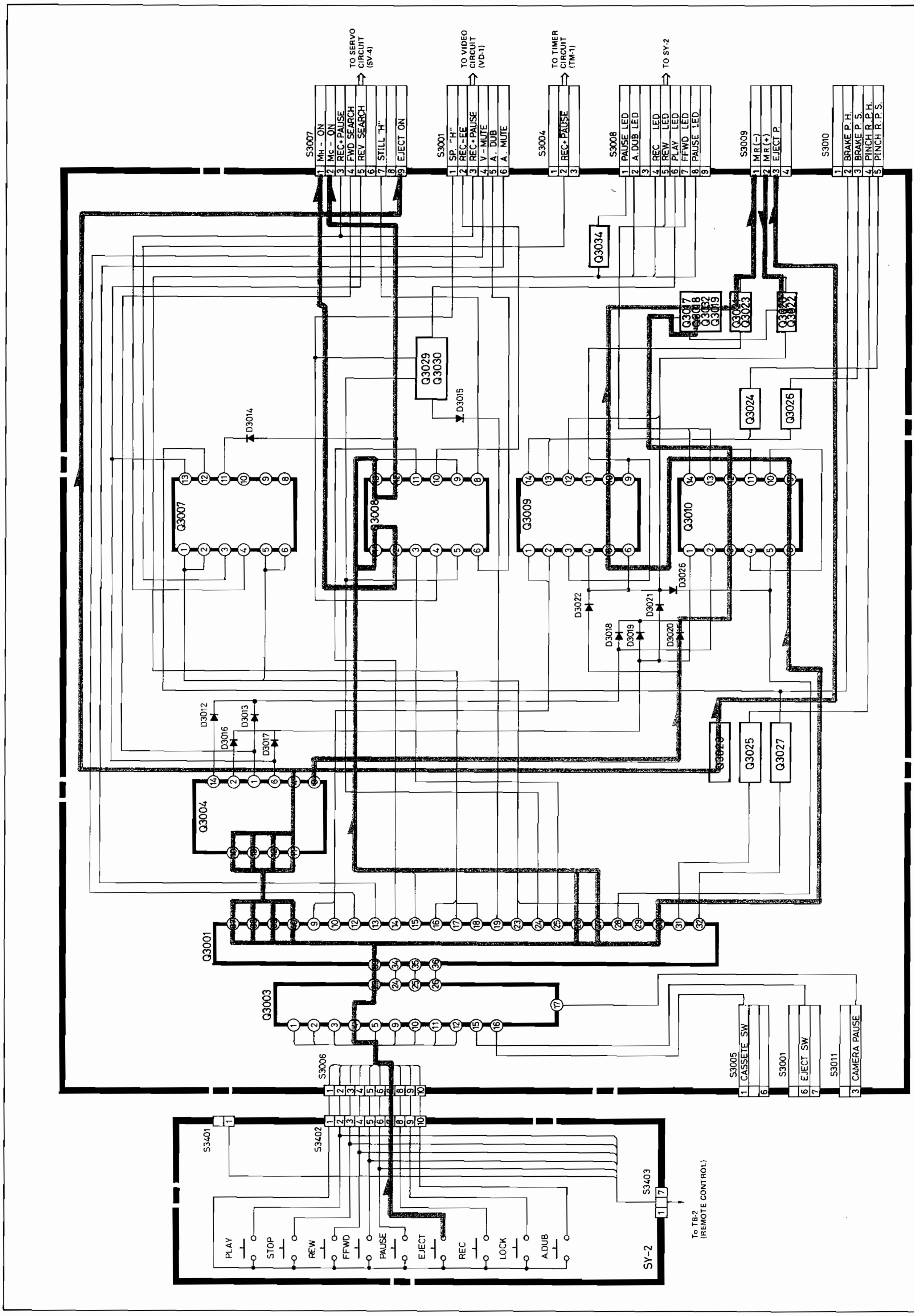

TO SERVO CIRCUIT (SV-4)
S3007
1 MH - ON
2 Mc - ON
3 REC+PAUSE
4 FWD SEARCH
5 REV SEARCH
6
7 STILL "H"
8
9 EJECT ON
TO VIDEO CIRCUIT (VD-1)
S3001
1 SP "H"
2 REC-EE
3 REC+PAUSE
4 V-MUTE
5 A. DUB
6 A. MUTE
TO TIMER CIRCUIT (TM-1)
S3004
1
2 REC+PAUSE
3
TO SY-2
S3008
1 PAUSE LED
2 A.DUB LED
3
4 REC LED
5 REW LED
6 PLAY LED
7 FFWD LED
8 PAUSE LED
9
S3009
1 MR(-)
2 MR(+)
3 EJECT P.
4
S3010
1
2 BRAKE P.H.
3 BRAKE P.S.
4 PINCH R.P.H.
5 PINCH R.P.S.
Q3034
Q3017
Q3018
Q3032
Q3019
Q3021
Q3023
Q3020
Q3022
Q3029
Q3030
D3015
D3014
Q3024
Q3026
Q3007
Q3008
Q3009
Q3010
D3022
D3021
D3026
D3018
D3019
D3020
D3012
D3013
D3016
D3017
Q3028
Q3025
Q3027
Q3004
Q3001
Q3003
S3005
CASSETE SW
S3001
EJECT SW
S3011
CAMERA PAUSE
S3006
S3401
S3402
S3403
To TB-2 (REMOTE CONTROL)
PLAY
STOP
REW
FFWD
PAUSE
EJECT
REC
LOCK
A.DUB
SY-2

Fig. 2-3-21 System control blockdiagram (UNLOADING mode)

D. AUDIO CIRCUIT

1. Outline

The audio circuit (VD-1 circuit board) combines the EQ-amplifier, microphone amplifier, recording amplifier, and the record/playback selection switch into a one-chip IC (Q2001) construction. A block diagram of the audio circuit is shown in Fig. 2-4-1.

2. EE Mode (Refer to Fig. 2-4-1.)

The audio signal input to terminal (1) of S2001 is input to pin (18) of Q2001 and, after being amplified by the microphone amplifier, is output from pin (4).

The signal output from pin (4) of Q2001 passes through the low pass filter, which is composed of L2003 and C2024, and is input to pin (9). After being amplified by the line amplifier, it is output from pin (10) of Q2001.

This part is changed to direct current by the rectifier circuit and is input to pin (16) of Q2001. Pin (16) and pin (17) input a direct current to the base of the IC internal circuit which is connected to pin (16) of Q2001. The input of pin (18) is controlled in accordance with the control of the resistance variation between the collector of the IC internal circuit connected to pin (17) and earth.

3. REC Mode (Refer to Fig. 2-4-2.)

The signal output to pin (10) of Q2001, after being adjusted by VR2002, is input to pin (12), passes through the recording amplifier, and is output from pin (13) of Q2001. In addition, the signal output from pin (13) of Q2001 acts as feedback according to the internal resistance of the IC, and also emphasizes the high frequencies according to the peaking circuit composed of L2002, R2012, and C2009. The signal output from pin (13) of Q2001 also passes through the bias trap composed of L2001 and C2015 and, when Q2002 and Q2003 are released (during recording), is supplied to the audio head as recording current.

The difference with the EE mode is that the oscillation circuit functions by the REC + B supplied from the VD-1 circuit board, the RELAY: RY2001 is connected between NO—C, and current is supplied to the AE head and FE head. (Refer to Fig. 2-4-2.)

This is called the REC mode. REC + B is supplied from the video section, passes through Q2013 and Q2016 causes oscillation. Simultaneously, Q2002, Q2002, and Q2005 are released by D2004, and Q2004 is short.

4. PLAY Mode (Refer to Fig. 2-4-3.)

Play + B is supplied from the video section, and supplies high level voltage to pin (14) of Q2001. Fig. 2-4-4 shows the relationship beteeen the voltage of pin (14) of Q2001 and each mode.

As shown in Fig. 2-4-4, muting is applied when the voltage of the EE mode, the REC mode, and the PLAY mode reaches approximately its halfway level. When the mute signal is input to Q2009, Q2009 is switched ON and muting is applied.

Q2004 is in a released condition. Therefore, when the signal from the audio head is input to pin (2) of Q2001, it is output to pin (4) of Q2001. This signal passes through C2021, VR2001, R2018, and C2018, applies negative feedback to pin (3) of Q2001, and composes the equalizer.

The signal output to pin (4) of Q2001 passes through the low pass filter just as during recording, and is input from VR2004 to pin (8); it then passes through the line amplifier, and is output to pin (10) of Q2001.

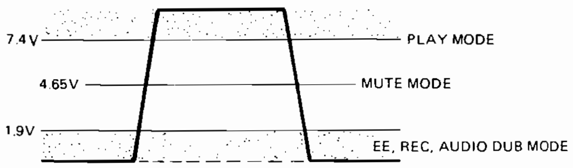


Fig. 2-4-4

5. Audio Dubbing Mode

For audio dubbing, the PLAY + B supplied from the VD-1 circuit board is dropped to low potential by Q2011, and Q2001 becomes the same as in the RECORD mode. However, unlike RECORD, RELAY: RY2001 is connected between the NC-C, and instead of being supplied to the full width erase head, current is supplied to dummy coil L2005, and only the audio signal is erased during audio dubbing. Other functions are the same as when recording.

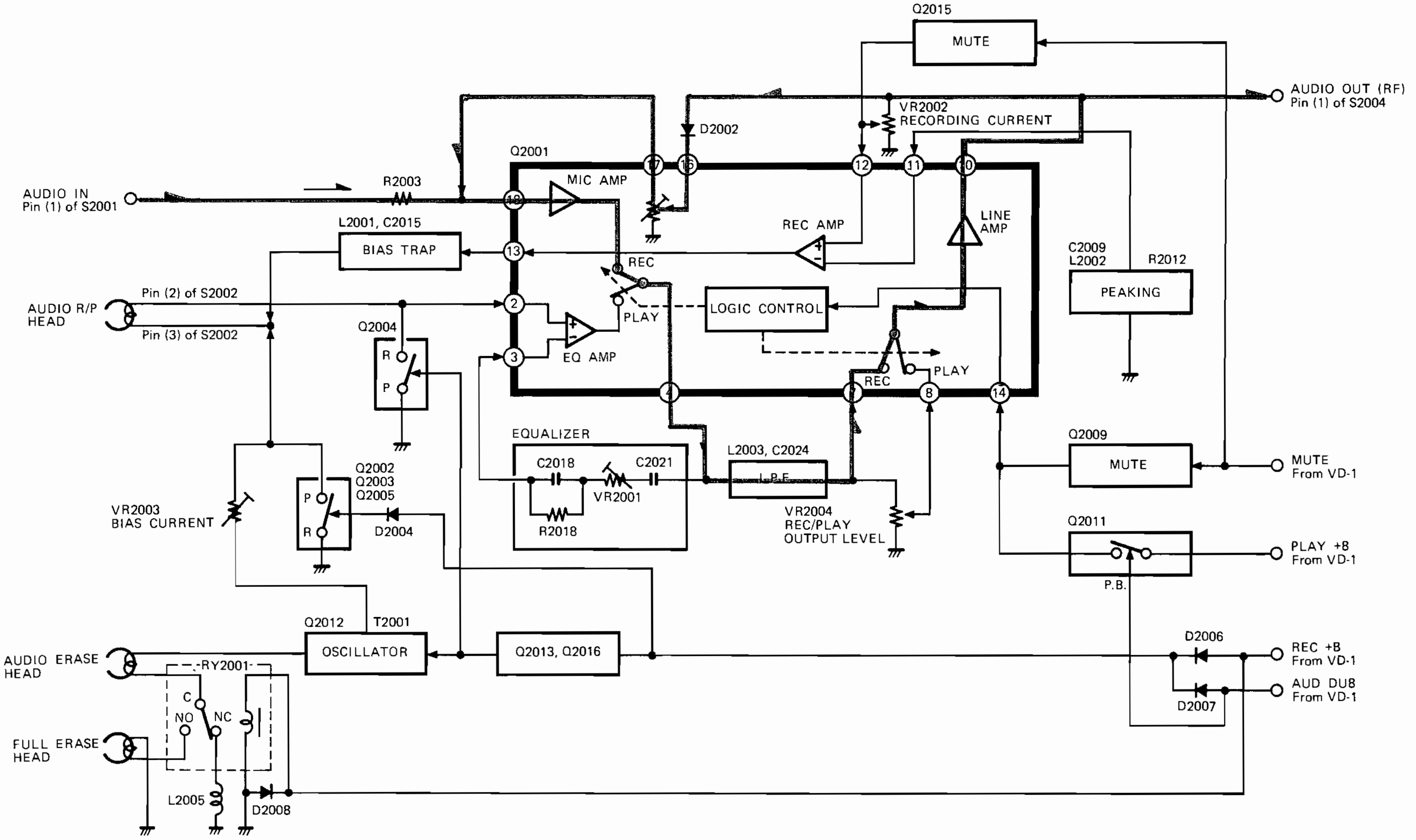

AUDIO IN
Pin (1) of S2001
AUDIO R/P
HEAD
Pin (2) of S2002
Pin (3) of S2002
AUDIO ERASE
HEAD
FULL ERASE
HEAD
R2003
L2001, C2015
BIAS TRAP
Q2004
R
P
VR2003
BIAS CURRENT
Q2002
Q2003
Q2005
P
R
D2004
Q2012
T2001
OSCILLATOR
-RY2001-
C
NO
NC
L2005
D2008
Q2001
MIC AMP
REC
PLAY
EQ AMP
LOGIC CONTROL
REC AMP
LINE
AMP
REC
PLAY
D2002
VR2002
RECORDING CURRENT
Q2015
MUTE
AUDIO OUT (RF)
Pin (1) of S2004
C2009
L2002
R2012
PEAKING
EQUALIZER
C2018
C2021
VR2001
R2018
L2003, C2024
L.P.F.
VR2004
REC/PLAY
OUTPUT LEVEL
Q2013, Q2016
Q2009
MUTE
MUTE
From VD-1
Q2011
P.B.
PLAY +B
From VD-1
D2006
D2007
REC +B
From VD-1
AUD DUB
From VD-1
18
13
2
3
17
16
12
11
10
4
7
8
14

Fig. 2-4-1 Audio circuit blockdiagram (EE mode)

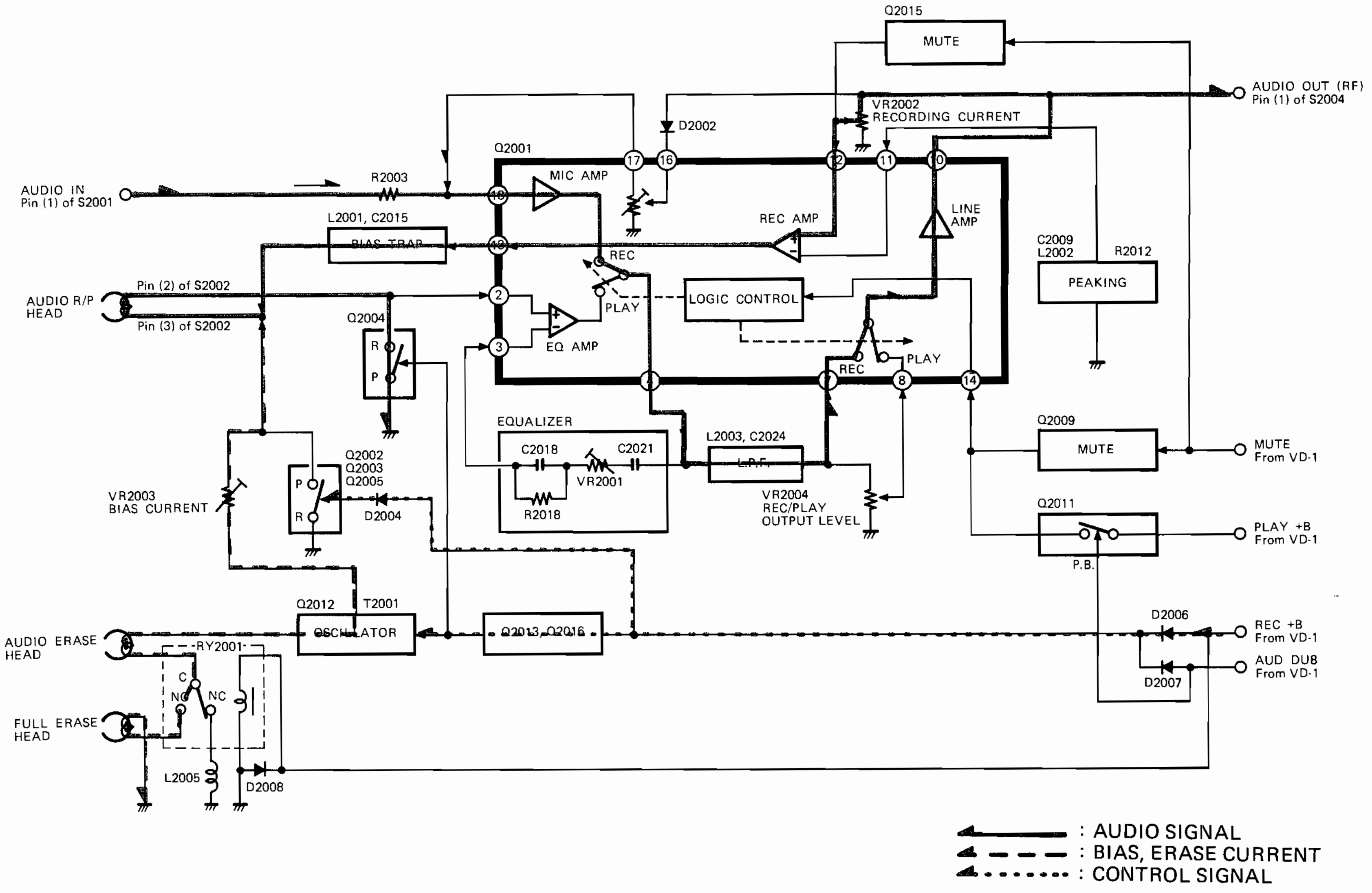

Q2015
MUTE
AUDIO OUT (RF)
Pin (1) of S2004
VR2002
RECORDING CURRENT
D2002
Q2001
AUDIO IN
Pin (1) of S2001
R2003
MIC AMP
L2001, C2015
BIAS TRAP
REC AMP
LINE AMP
C2009
L2002
R2012
PEAKING
AUDIO R/P HEAD
Pin (2) of S2002
Pin (3) of S2002
REC
PLAY
LOGIC CONTROL
EQ AMP
Q2004
R
P
REC
PLAY
EQUALIZER
C2018
C2021
VR2001
R2018
L2003, C2024
L.P.F.
VR2004
REC/PLAY
OUTPUT LEVEL
Q2009
MUTE
MUTE
From VD-1
Q2002
Q2003
Q2005
D2004
VR2003
BIAS CURRENT
Q2011
P.B.
PLAY +B
From VD-1
Q2012
T2001
OSCILLATOR
Q2013, Q2016
D2006
REC +B
From VD-1
AUD DUB
From VD-1
D2007
AUDIO ERASE HEAD
RY2001
C
NC
NC
FULL ERASE HEAD
L2005
D2008
: AUDIO SIGNAL
: BIAS, ERASE CURRENT
: CONTROL SIGNAL

Fig. 2-4-2 Audio circuit blockdiagram (REC mode)

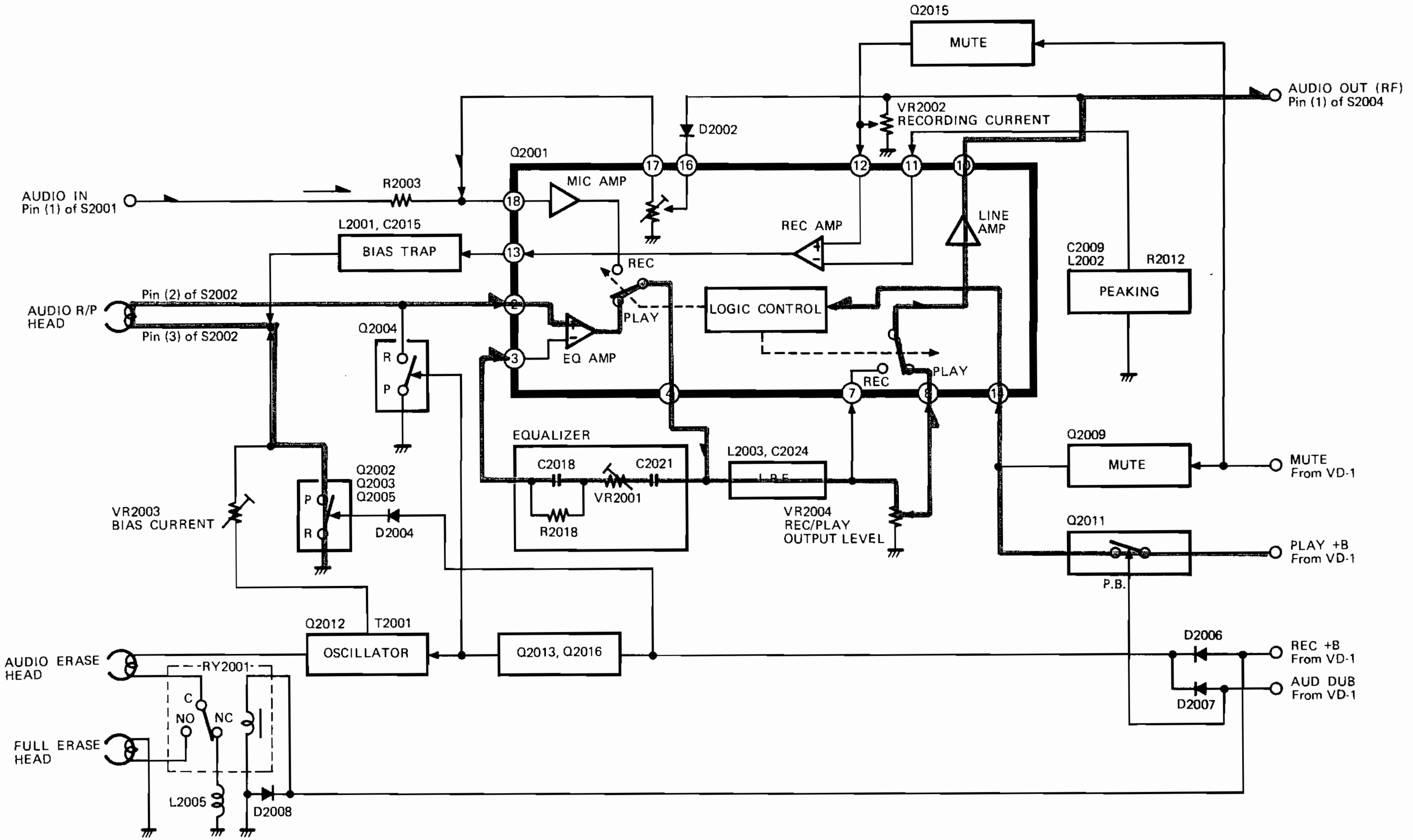

Q2015
MUTE
AUDIO OUT (RF)
Pin (1) of S2004
VR2002
RECORDING CURRENT
D2002
Q2001
AUDIO IN
Pin (1) of S2001
R2003
MIC AMP
L2001, C2015
BIAS TRAP
REC AMP
LINE AMP
C2009
L2002
R2012
PEAKING
REC
AUDIO R/P HEAD
Pin (2) of S2002
Pin (3) of S2002
LOGIC CONTROL
PLAY
EQ AMP
Q2004
R
P
PLAY
REC
EQUALIZER
C2018
C2021
VR2001
R2018
L2003, C2024
L.P.F.
VR2004
REC/PLAY
OUTPUT LEVEL
Q2009
MUTE
MUTE
From VD-1
Q2002
Q2003
Q2005
D2004
VR2003
BIAS CURRENT
Q2011
P.B.
PLAY +B
From VD-1
Q2012
T2001
OSCILLATOR
Q2013, Q2016
D2006
REC +B
From VD-1
AUD DUB
From VD-1
D2007
AUDIO ERASE HEAD
RY2001
C
NO
NC
FULL ERASE HEAD
L2005
D2008
2
3
4
7
8
10
11
12
13
16
17
18
19

Fig. 2-4-3 Audio circuit blockdiagram (PLAY mode)

E. POWER SUPPLY CIRCUIT

1. Outline

The power supply circuit is composed of the power supply transformer and two circuit boards, the AC power supply circuit (PW-2 circuit board) and the DC power supply circuit (PW-1 circuit board). A block diagram of the power supply circuit is shown in Fig. 2-5-1.

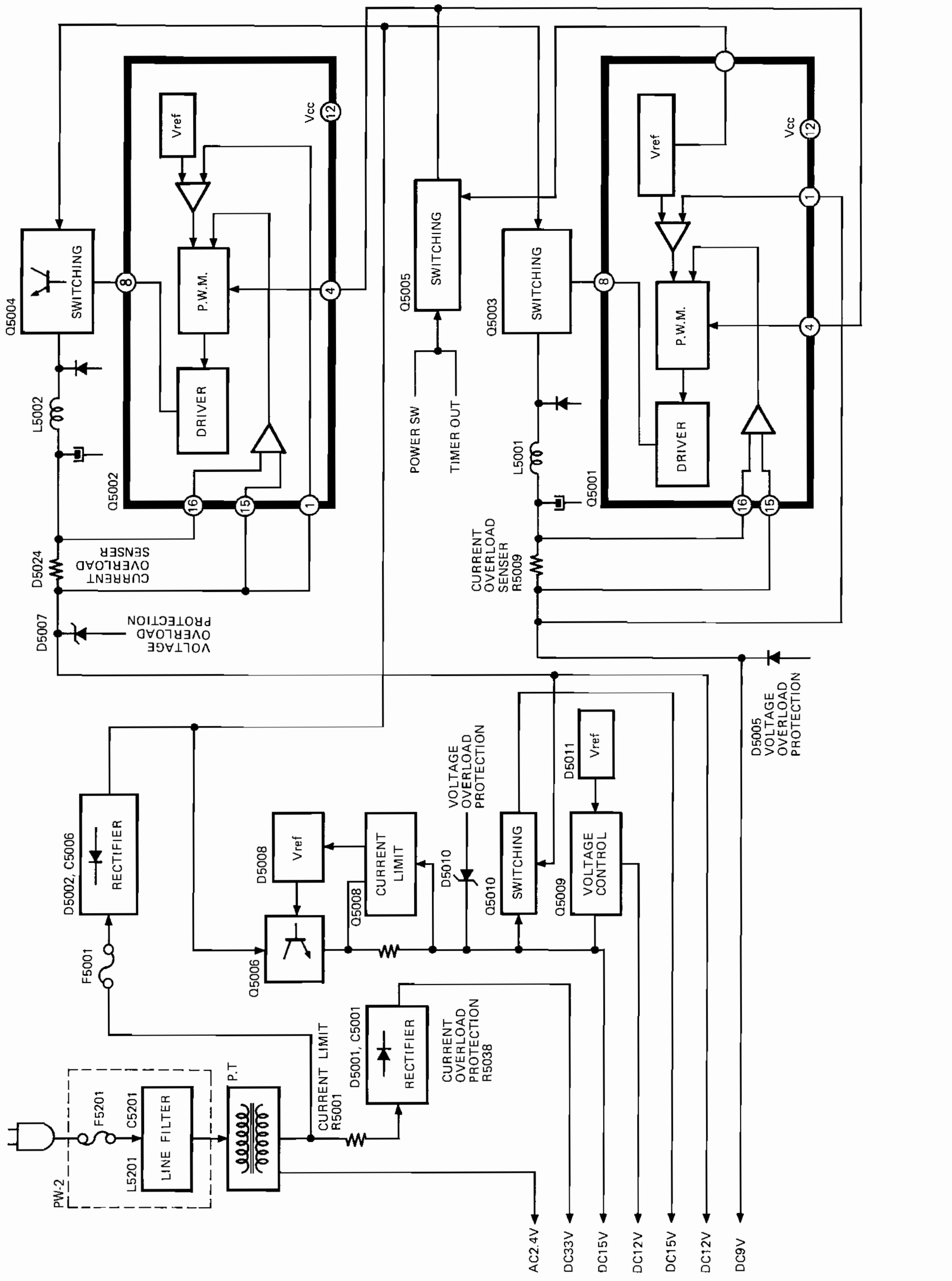

Q5004
SWITCHING
L5002
D5024
D5007
CURRENT OVERLOAD SENSER
VOLTAGE OVERLOAD PROTECTION
Q5002
Vref
P.W.M.
DRIVER
Vcc
12
8
4
16
15
1
Q5005
SWITCHING
POWER SW
TIMER OUT
Q5003
SWITCHING
L5001
Q5001
CURRENT OVERLOAD SENSER R5009
D5005 VOLTAGE OVERLOAD PROTECTION
D5011
Vref
VOLTAGE CONTROL
Q5009
SWITCHING
Q5010
D5010
VOLTAGE OVERLOAD PROTECTION
D5008
Vref
CURRENT LIMIT
Q5008
Q5006
D5002, C5006
RECTIFIER
F5001
D5001, C5001
RECTIFIER
CURRENT LIMIT R5001
CURRENT OVERLOAD PROTECTION R5038
P.T
LINE FILTER
L5201
C5201
F5201
PW-2
AC2.4V
DC33V
DC15V
DC12V
DC15V
DC12V
DC9V

Fig. 2-5-1 Power circuit blockdiagram

2. Switching circuit

A switching circuit that causes synchronous operation of Q5001 and Q5002 is used.

The switching circuit is shown in Fig. 2-5-2, and the power switch operation table is shonw in Table 2-5-1.

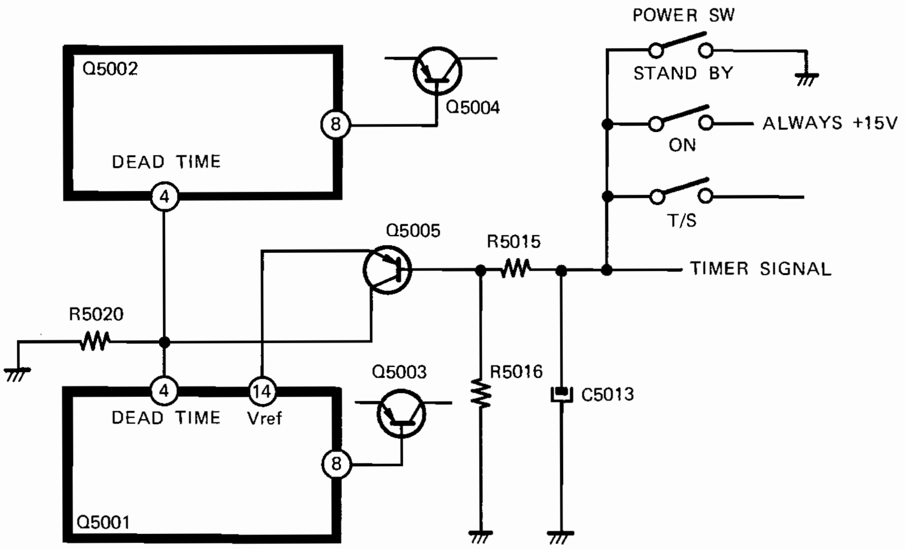

POWER SW
STAND BY
ALWAYS +15V
ON
T/S
TIMER SIGNAL
Q5002
DEAD TIME
4
8
Q5004
Q5005
R5015
R5020
Q5003
R5016
C5013
4
14
DEAD TIME
Vref
8
Q5001

Fig. 2-5-2 Switching circuit

POWER SW. MODE		Q5005	Pin (4) of Q5002	Constant voltage circuit operation
ON		OFF	L	15 V, 12 V, 9 V, all circuits ON
STAND BY		ON	H	12 V, 9 V, circuit OFF
T/S	TIMER H	OFF	L	All circuits ON
	TIMER L	ON	H	12 V, 9 V, circuit OFF

Table 2-5-1 Switching circuit operation

3. +15V Output Regulator Circuit

The +15V output regulator circuit is a series down type regulator circuit that has an excess current protection circuit for D5010, and an excess current protection circuit composed of Q5008 and R5036 ~ 5038.

III. CIRCUIT BOARD DISASSEMBLY

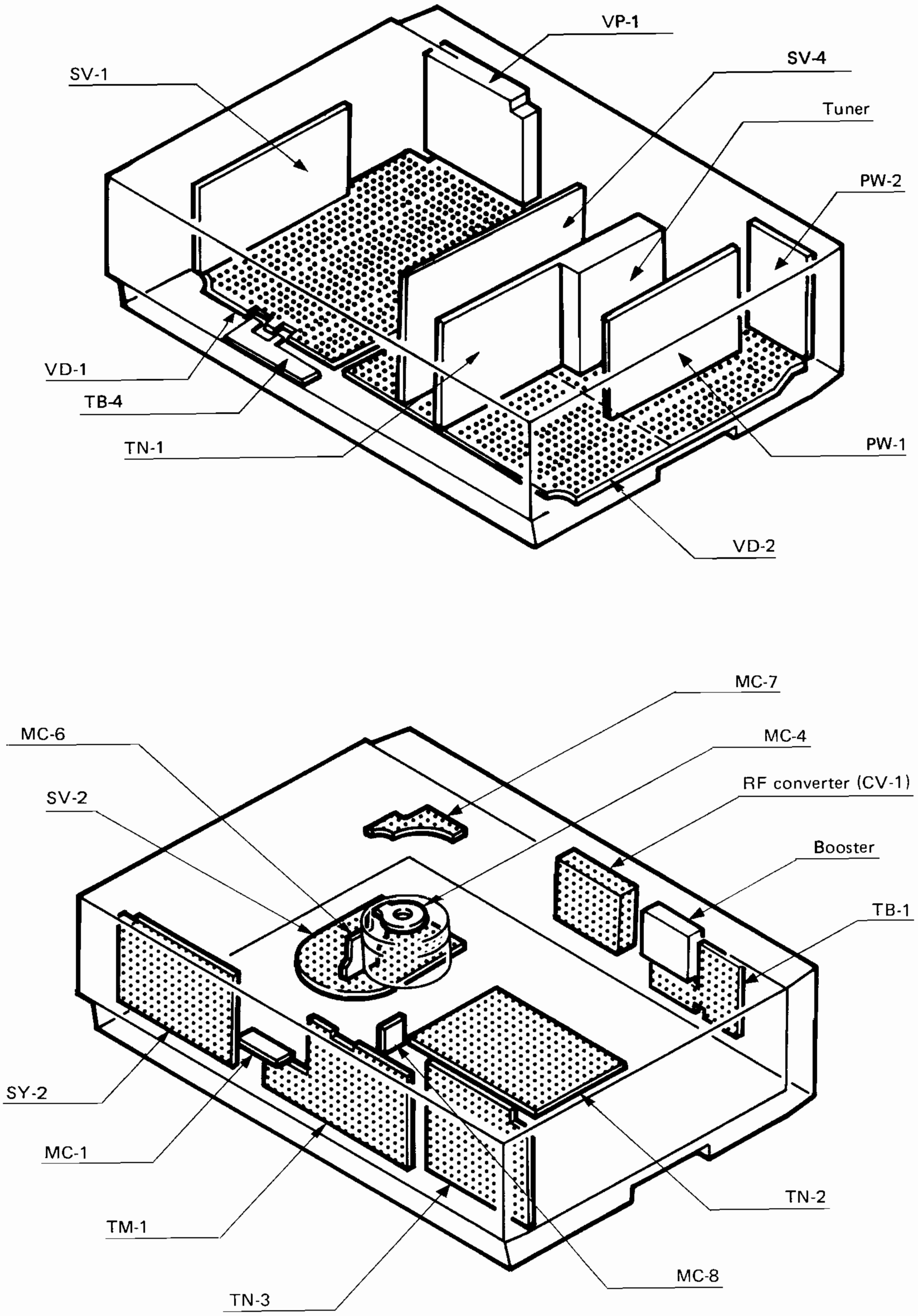

VP-1
SV-4
SV-1
Tuner
PW-2
VD-1
TB-4
TN-1
PW-1
VD-2
MC-7
MC-6
MC-4
RF converter (CV-1)
SV-2
Booster
TB-1
SY-2
MC-1
TN-2
TM-1
MC-8
TN-3

Fig. 3-1-1

IV. CIRCUIT ADJUSTMENTS

A. POWER SUPPLY CIRCUIT (PW-1 CIRCUIT BOARD) (Refer to Fig. 4-1-1.)

1. +15V Adjustment

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
VR5003	TP5003 TP5004	Digital voltmeter	Power switch "ON" STOP mode

a. Connect the digital voltmeter to TP5003 and TP5004 (earth).

b. Adjust VR5003 so that the voltage is DC +15.0 $^{+0.1}_{-0}$ V.

2. +12V Adjustment

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
VR5002	TP5002 TP5004	Digital voltmeter	Power switch "ON" STOP mode

a. Connect the digital voltmeter to TP5002 and TP5004 (earth).

b. Adjust VR5002 so that the voltage is DC +12.3 $^{+0.1}_{-0}$ V.

3. +9V Adjustment

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
VR5001	TP5001 TP5004	Digital voltmeter	Power switch "ON" STOP mode

a. Connect the digital voltmeter to TP5001 and TP5004 (earth).

b. Adjust VR5001 so that the voltage is DC +9.0 $^{+0.1}_{-0}$ V.

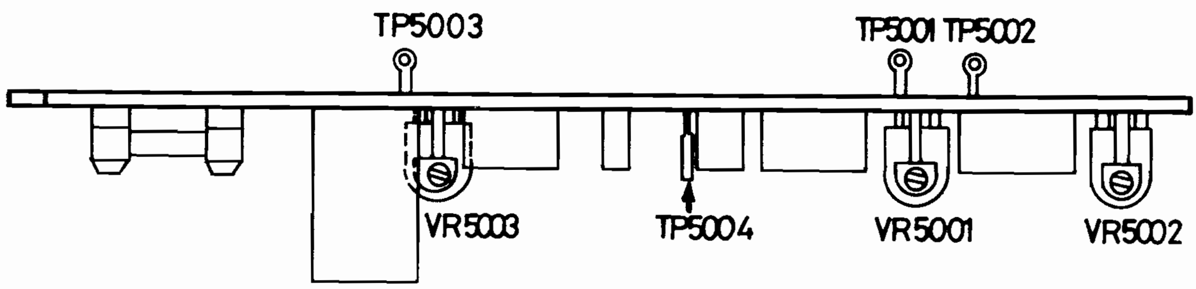


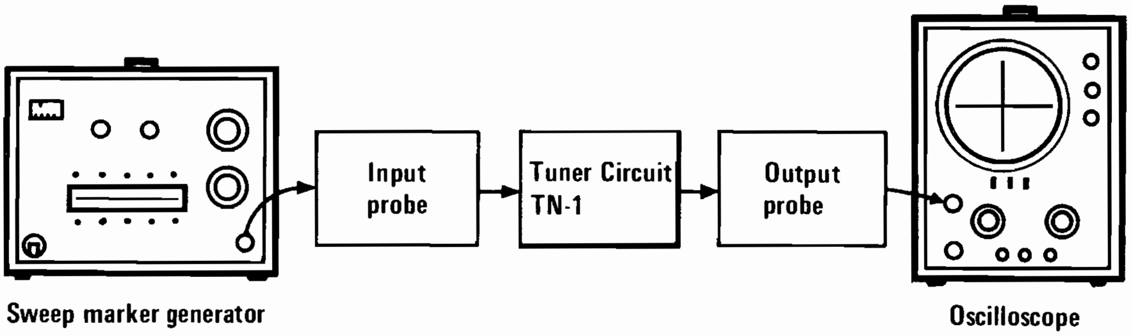
Fig. 4-1-1 PW-1 Circuit Board (Top side view)

B. TUNER CIRCUIT (TN-1 CIRCUIT BOARD)

(Refer to Fig. 4-2-2.)

Connect a sweep marker generator and an oscilloscope as shown in Fig. 4-2-1.
Supply the output signal from the sweep marker generator to the TN-1 circuit board through an input probe, and supply the output signal from the circuit board, through an output probe, to the oscilloscope.

Set the tuner band selector to the "III"* position.


Input probe
Tuner Circuit TN-1
Output probe
Sweep marker generator
Oscilloscope

Asterisked (*) symbol differ depending on the country as follows:	
Europe, Australia, New Zealand, S. Africa	III
UK, Hongkong	U
Europe S Band Model	VL

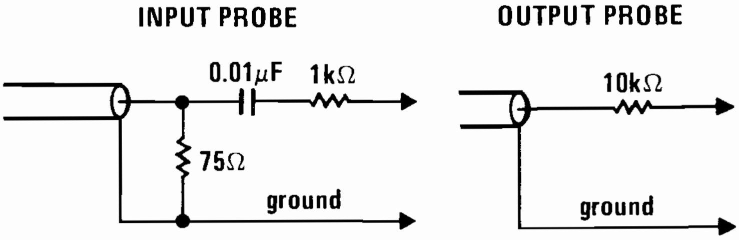

INPUT PROBE
0.01μF
1kΩ
75Ω
ground
OUTPUT PROBE
10kΩ
ground

Fig. 4-2-1

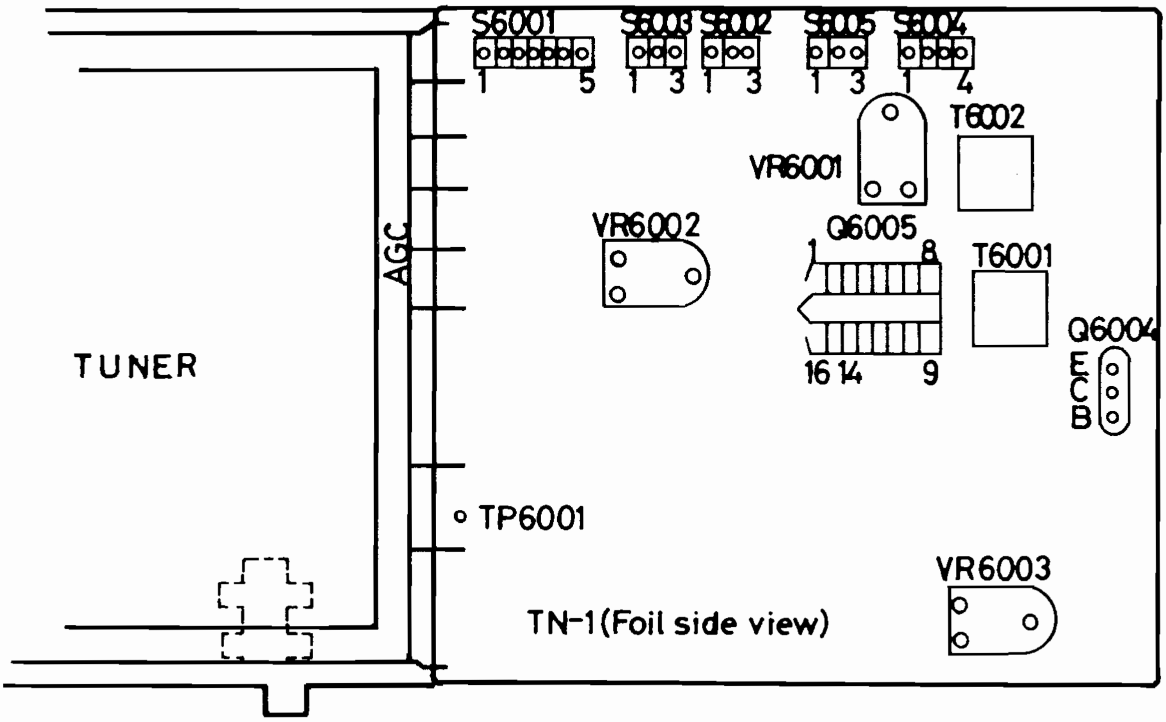

S6001
1
5
S6003
1
3
S6002
1
3
S6005
1
3
S6004
1
4
T6002
VR6001
VR6002
Q6005
1
8
16
14
9
T6001
Q6004
E
C
B
AGC
TUNER
TP6001
VR6003
TN-1(Foil side view)

Fig. 4-2-2 TN-1 Circuit Board (Parts side view)

1. VIF Adjustment

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
Converter transformer	E of Q6004	Sweep marker generator Oscilloscope DC power supply Special screwdriver	STOP mode

a. Connect a 22-ohm resistor between pin (9) of Q6005 and pin (8) of Q6005 and disconnect the S6004 connector.

b. Supply DC +0.8V to pin (14) of Q6005 as an AGC voltage.

c. Set the output level of the sweep marker generator to VIF, −25 dB (28mVrms), and connect the output to the TP6001 terminal through an input probe.

d. Connect the output signal at E of Q6004 on the circuit board to the oscilloscope through an output probe, and observe the waveform.

e. Adjust the AGC voltage so that the waveform level is equal to 0.8Vp-p.

f. Adjust the converter transformer of the tuner so that P (the 38.9[*1]-MHz marker) becomes 40 ±[*2] 2%. (See Fig. 4-2-3.)

g. Remove the 22-ohm resistor, and reconnect the S6004 connector.

2. Detection Transformer

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
T6001	E of Q6004	Sweep marker generator Oscilloscope DC power supply Special screwdriver	STOP mode

a. Supply DC +2V to pin (14) of Q6005 as an AGC voltage, and remove the S6004 connector.

b. Set the output level of the sweep marker generator to VIF, −25dB (28mVrms), and connect the output to the TP6001 terminal through an input probe.

c. Connect the output signal at E of Q6004 on the circuit board to the oscilloscope through an output probe, and observe the waveform.

d. Adjust AGC voltage so that the waveform level is equal to 2.0Vp-p.

e. Adjust the T6001 core so that P (the 38.9[*3]-MHz marker) becomes 80%[*4]. (See Fig. 4-2-4.)

f. Connect the S6004 connector.

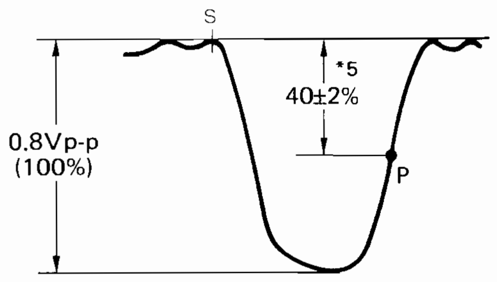


Fig. 4-2-3

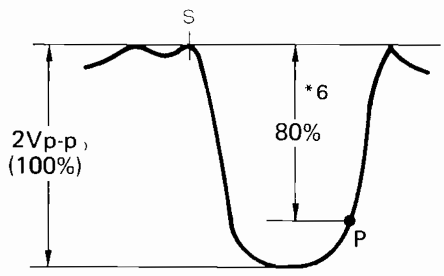


Fig. 4-2-4

3. AFT Circuit (1)

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
T6002	Pin (1) of S6005	Sweep marker generator Oscilloscope DC power supply Special screwdriver	STOP mode AFT switch "ON"

a. Supply DC +3.5V to Pin (1) of S6005 as an AGC voltage.

b. Set the output level of the sweep marker generator to VIF, -13dB (112mVrms), and connect the output to the TP terminal of the tuner through an input probe. (See Fig. 4-2-2.)

c. Connect the output signal at pin (1) of S6005 on the circuit board to the oscilloscope through an output probe, and observe the waveform.

d. Adjust T6002 so that P (the 38.9-MHz[*5] marker) is positioned on the base line. (See Fig. 4-2-5.)

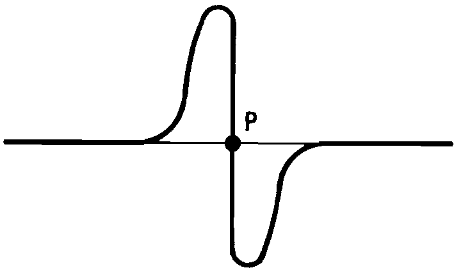


Fig. 4-2-5

4. AFT Circuit (2)

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
VR6001	Pin (6) of Q6005 Pin (5) of Q6005	DC power supply DC voltmeter	STOP mode AFT switch "ON"

a. Eliminate all input signals.

b. Apply DC +5 ~8V to pin (14) of Q6005.

c. Adjust VR6001 so that the voltage between pin (6) of Q6005 and pin (5) of Q6005 is 0 ~0.5V.

Asterisked (*) numerals differ depending on the country as follows.

	*1	*2	*3	*4	*5
Europe	38.9MHz	40±2%	38.9MHz	80%	38.9MHz
UK, Hongkong, S. Africa	39.5MHz	35±2%	39.5MHz	70%	39.5MHz
Australia, New Zealand	36.875MHz	40±2%	36.875MHz	80%	36.875MHz
Europe S Band Model	38.9MHz	35±2%	38.9MHz	75%	38.9MHz

5. RF AGC Circuit

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
VR6002	Tuner AGC terminal	Colour-bar generator with RF Digital voltmeter	STOP mode

a. Connect the colour-bar generator to the antenna input connector (ANT IN) of the VCR.
(VHF[*1] input: channel 5[*2] or UHF: input channel 31.69dBμ[*3] ±1dBμ; modulation degree 87.5%)

b. Press the channel selector corresponding to channel 5 or 31[*4], and tune the VCR for the best possible reception by observing the picture on the screen.

c. Set the AFT switch to the "ON" position.

d. Measure the voltage at the AGC terminal of the tuner, and adjust VR6002 so that the voltage is 5.7[*5] ± 0.1V. (UHF: 5.0 ±0.1V)

6. Audio Output

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
VR6003	Pin (4) of S6004	TV signal generator Oscilloscope	STOP mode

a. Connect the TV signal generator to the antenna input connector (ANT IN) of the VCR.
[VHF[*6] input: channel 5[*7], 60dBμ (1mVrms) or higher, 60% modulation with sine audio signal at 400 Hz]

b. Press the channel selector corresponding to channel 5[*8], and tune the VCR for the best possible reception by observing the picture on the screen.

c. Set the AFT switch to the "ON" position.

d. Observe the waveform of the audio output signal at pin (4) of S6004 on the oscilloscope, and adjust VR6003 so that the output level is equal to 0.67 ±0.1Vp-p.

Asterisked (*) numerals and symbols differ depending on the country as follows.

	*1	*2	*3	*4	*5	*6	*7	*8
Europe	VHF	Channel 5	69dBμ	Channel 5	5.7	VHF	Channel 5	Channel 6
UK, Hongkong	UHF	Channel 24	69dBμ	Channel 24	4.8	UHF	Channel 24	Channel 24
S. Africa	UHF	Channel 31	69dBμ	Channel 31	5.0	UHF	Channel 31	Channel 31
Australia, New Zealand	VHF	Channel 5	66dBμ	Channel 5	4.5	VHF	Channel 5	Channel 5
Europe S Band Model	VHF	Channel 5	66dBμ	Channel 5	5.3	VHF	Channel 5	Channel 5

C. SERVO CIRCUIT (SV-1 CIRCUIT BOARD) (Refer to Fig. 4-3-1.)

[HEAD SERVO SYSTEM]

1. Head Switching Position Pre-setting

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
VR4001 VR4002	——	——	——

a. Align VR4001 and VR4002 to the centre position of the rotation angle.

2. FWD Lock

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
VR4005	Pin (3) of S4007	Oscilloscope Video cassette	REC mode

a. Load a video cassette suitable for recording and set the VCR for the recording of a television broadcast.

b. Connect the oscilloscope to pin (3) of S4007.

c. Adjust VR4005 so that the voltage is DC 4.0±0.1V

3. FWD APC Lock Phase

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
VR4003	Pin (2) of S4007 Video output terminal	Oscilloscope Video cassette	REC mode

a. Load a video cassette suitable for recording, and set the VCR for the recording of a television broadcast.

b. Connect channel 1 of the oscilloscope to pin (2) of S4007 (RF switching pulse).

c. Connect channel 2 of the oscilloscope to the video output terminal.

d. Adjust VR4003 so that the leading edge of the vertical synchronizing signal of the video signal (video output terminal) is delayed 7H ± 0.5H from the fall of the RF switching pulse. (Refer to Fig. 4-3-2)

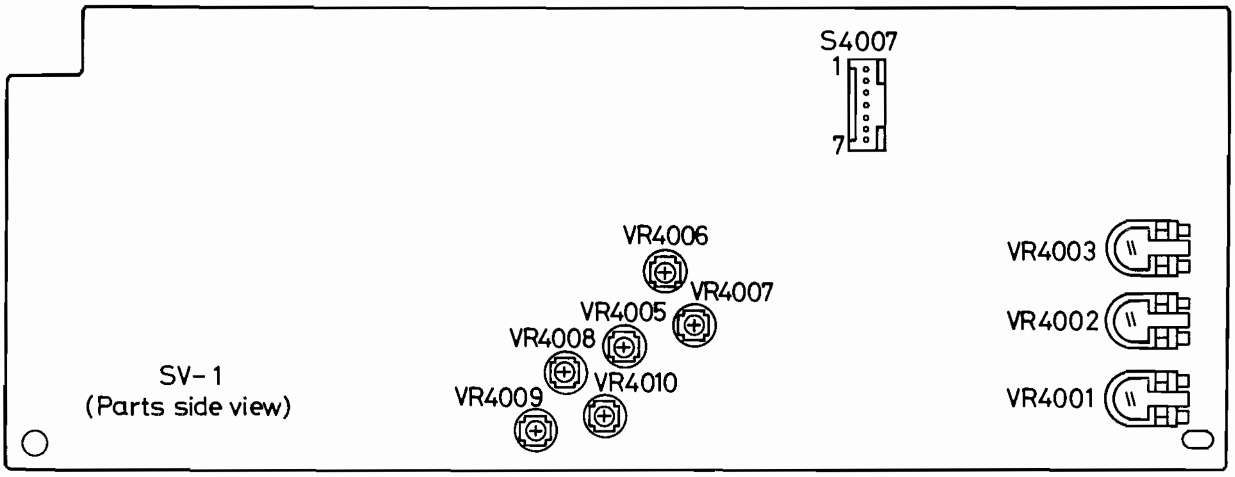
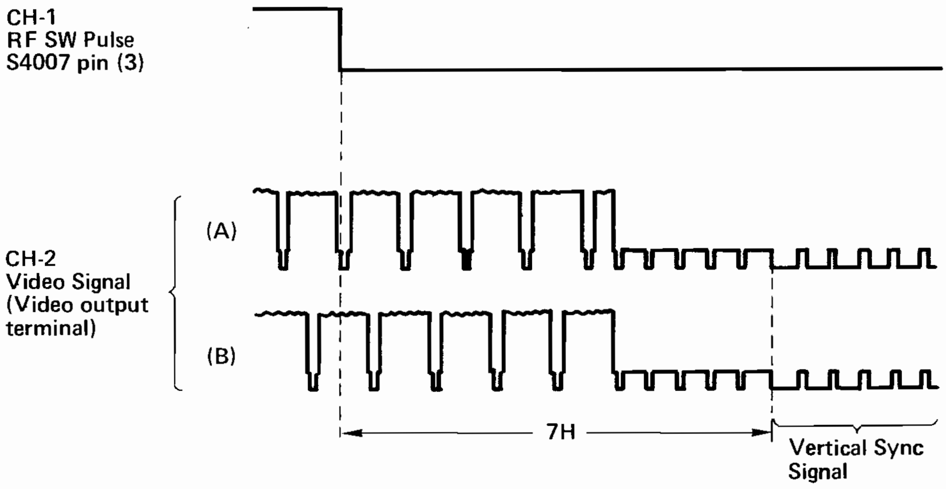


Fig. 4-3-1 SV-1 Circuit Board (Parts side view)

4. Head Switching Position

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
VR4002 VR4001	Pin (2) of S4007 Video output terminal	Oscilloscope Alignment cassette (VJ-0113)	PLAY mode

a. Load the alignment cassette (VJ-0113) and set the VCR to the PLAY mode.
b. Connect channel 1 of the oscilloscope to pin (2) of S4007 (RF switching pulse).
c. Connect channel 2 of the oscilloscope to the video output terminal.
d. Turn the tracking control knob so that the maximum amplitude of the RF signal is obtained.
e. Adjust VR4002 so that the leading edge of the vertical synchronizing signal of the video signal (video output terminal) is delayed 7H ± 0.5H from the fall of the RF switching pulse.
f. Adjust VR4001 so that the leading edge of the vertical synchronizing signal of the video signal (video output terminal) is delayed 7H ± 0.5H from the rise of the RF switching signal.


CH-1
RF SW Pulse
S4007 pin (3)
CH-2
Video Signal
(Video output
terminal)
(A)
(B)
7H
Vertical Sync
Signal

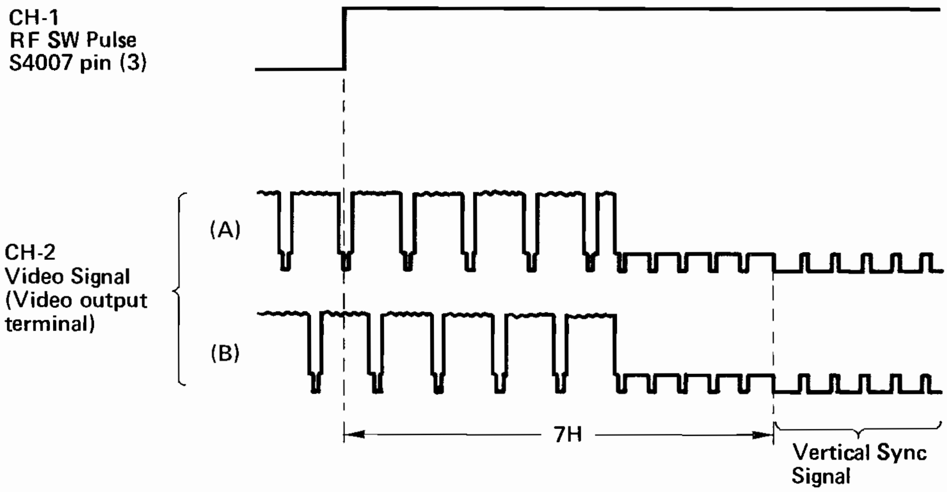

CH-1
RF SW Pulse
S4007 pin (3)
CH-2
Video Signal
(Video output
terminal)
(A)
(B)
7H
Vertical Sync
Signal

Fig. 4-3-2.

5. FWD Search Lock

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
VR4006	Pin (3) of S4007	Oscilloscope Video cassette	REC mode FWD Serch mode

a. Load a video cassette suitable for recording, and set the VCR for the recording of a television broadcast. After recording the cassette, playback to FWD search mode.

b. Connect the oscilloscpe to pin (3) of S4007.

c. Adjust VR4006 so that the voltage is DC 4 ±0.1V.

6. REW Search Lock

Adjustment location	Measurement point	Measurement equipment	Adjustment conditon
VR4007	Pin (3) of S4007	Oscilloscope Video cassette	REC mode FWD Serch mode

a. Load a video cassette suitable for recording, and set the VCR for the recording of a television broadcast. After recording the cassette, playback to REW search mode.

b. Connect the oscilloscope to pin (3) of S4007.

c. Adjust VR4007 so that the voltage is DC 6 ±0.2V.

[CAPSTAN SERVO SYSTEM]

1. FWD Lock

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
VR4008	Pin (5) of S4007	Oscilloscope Video cassette	REC mode

a. Load a video cassette suitable for recording, and then set the VCR for the recording of a television broadcast.

b. Connect the oscilloscope to pin (5) of S4007.

c. Adjust VR4008 so that the voltage is DC 6.0 ±0.2V.

2. Tracking

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
VR4004	Pin (1) of S4007 Pin (6) of S4007	Oscilloscope Video cassette	REC mode PLAY mode

a. Load a video cassette suitable for recording, and then set the VCR for the recording of a television broadcast.

b. Set the tracking control to the centre (notched) position.

c. Connect channel 1 of the oscilloscope to pin (1) of S4007 (reference pulse).

d. Connect channel 2 of the oscilloscope to pin (6) of S4007 (playback control pulse).

e. Playback the recorded television broadcast.

f. Adjust VR4005 so that the fall of the playback control pulse is delayed to 3.4 ± 0.3 milliseconds after the fall of the reference pulse.

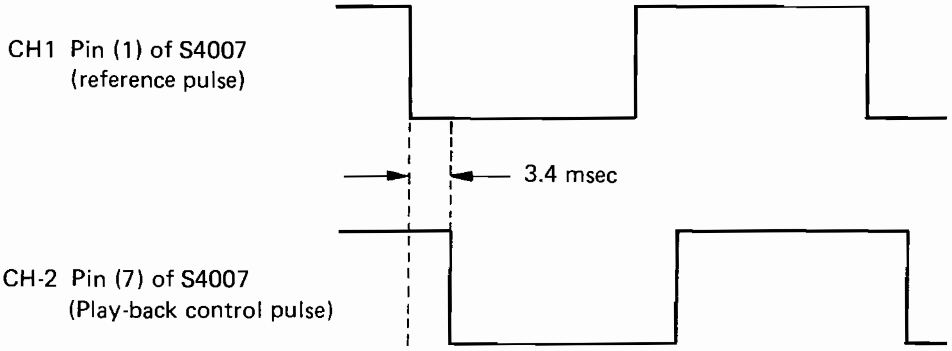


Fig. 4.3.3

3. FWD Search Lock

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
VR4009	Pin (5) of S4007	Oscilloscope Video cassette	REC mode FWD Search mode

a. Load a video cassette suitable for recording, and set the VCR for the recording of a television broadcast. After recording the cassette, playback to FWD search mode.

b. Connect the oscilloscope to pin (5) of S4007.

c. Adjust VR4008 so that the voltage is DC 6 ±0.2V.

4. REW Search Lock

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
VR4010	Pin (5) of S4007	Oscilloscope Video cassette	REC mode REW Search mode

a. Load a video cassette suitable for recording, and set the VCR for the recording of a television broadcast. After recording the cassette, playback to REW search mode.

b. Connect the oscilloscope to pin (5) of S4007.

c. Adjust VR4010 so that the voltage is DC 6±0.2V.

D. VIDEO CIRCUIT

(VP-1, VD-1 CIRCUIT BOARD AND VD-2 CIRCUIT BOARD) (Refer to Fig. 4-4-1)

[ADJUSTMENTS FOR THE VP-1]

1. Preamplifier Frequency Response

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
VR1503 (channel A) VR1502 (channel B)	Pin (4) of S1502	Oscilloscope Alignment cassete (VJ-0113)	PLAY mode

a. Load the alignment cassette (VJ-0113), and playback the RF sweep signal.

b. Connect the oscilloscope to pin (4) of S1502.
At this time, use pin (3) of S1502 (RF switching pulse) for the trigger pulse for waveform observation.
Trigger slope +: Channel B
-: Channel A

c. Turn the tracking VR so that the waveform amplitude reaches the maximum level.

d. Adjust VR1503 (channel A) and VR1502 (channel B), so that the amplitude at 5.2 MHz is about 90% of the amplitude at 3.58 MHz.

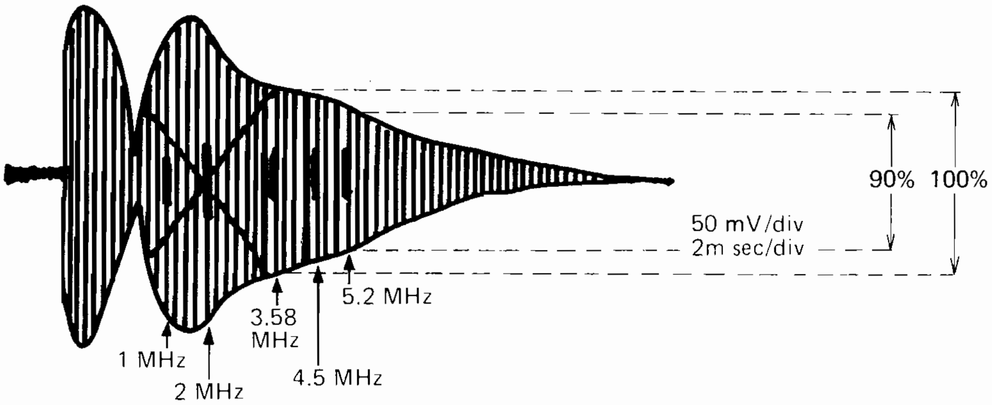


Fig. 4-4-1

*Adjustment procedure when the dropout adjustment tape (VJ-0077) is not available.
Adjust VR1503 and VR1502 until any "flicker" or "FM inversion: black noise" disappear.

2. Dropout Compensator Sensitivity

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
VR1501	TV screen	Alignment cassette (VJ-0077)	PLAY mode

a. Load the alignment cassette (VJ-0077), and the VCR to the PLAY mode.

b. Turn VR1501 completely to the left (when seen from the parts side).

c. Next, turn VR1501 slowly back to the right to adjust the non-compensation portion so that it is 0.8 ~ 1.0 colour bar.

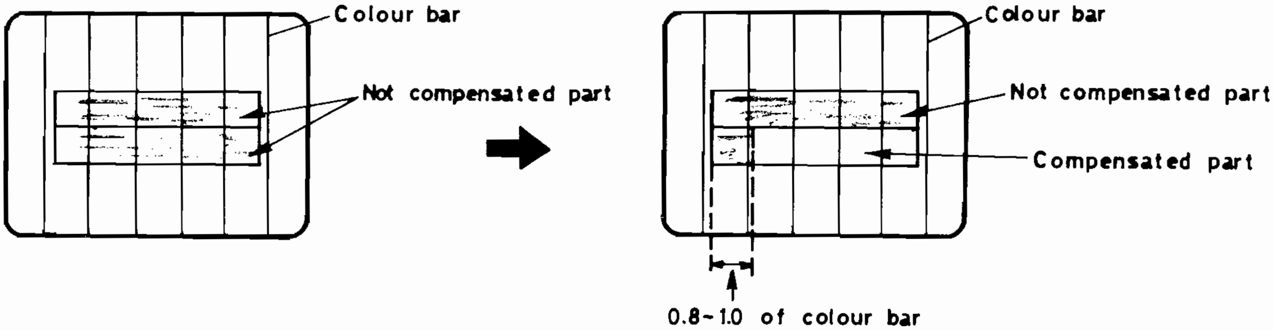

Colour bar
Not compensated part
Colour bar
Not compensated part
Compensated part
0.8~1.0 of colour bar

Fig. 4-4-2

* Adjustment procedure when the dropout adjustment tape (VJ-0077) is not available.

a. Playback a tape that has a lot of dropout.

b. Adjust VR1501 until dropout is compensated for.

3. Recording Amplifier Frequency Response

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
VR1505	TP1502 TP1501	Oscilloscope Colour-bar generator	REC mode

a. Set VR1505 to the centre position.

b. Input a colour-bar signal which includes a 100% white signal and set the VCR to the REC mode.

c. Connect the oscilloscope to TP1502, and then connect TP1501 to earth.
NOTE: Because TP1501 is Vcc (+ 9V), be sure not to connect it to the earth of the VCR chassis.

d. Adjust VR1505 so that the waveform becomes flat.

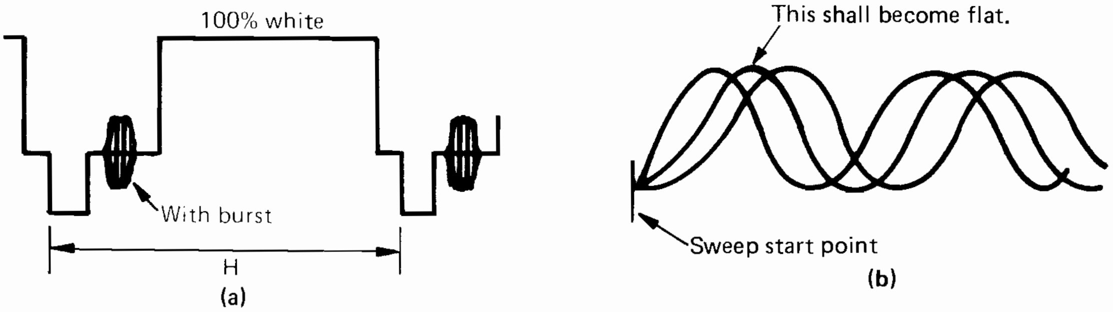

100% white
With burst
H
(a)
This shall become flat.
Sweep start point
(b)

Fig. 4-4-3

4. Recording Current

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
VR1504	TP1502 TP1501	Oscilloscope Colour-bar generator	REC mode

a. Input a black-and-white signal containing a 100%, white signal and set the VCR to the REC mode.

b. Connect the oscilloscope to TP1502, and then connect TP1501 to earth.

c. Adjust VR1504 so that it is 140 ±10mVp-p.

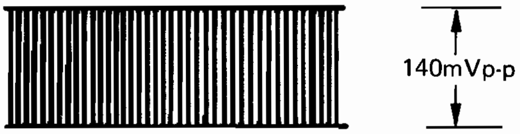


Fig. 4-4-4

[ADJUSTMENTS FOR THE VD-1]

1. 4.43-MHz Trap

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
T1003	Pin (16) of Q1001	Oscilloscope Colour-bar generator	STOP mode

a. Input a colour-bar signal (EE colour-bar signal) which contains a 100% white signal.

b. Connec the oscilloscope to pin (16) of Q1001.

c. Adjust T1003 so that the chrominance component is minimized.

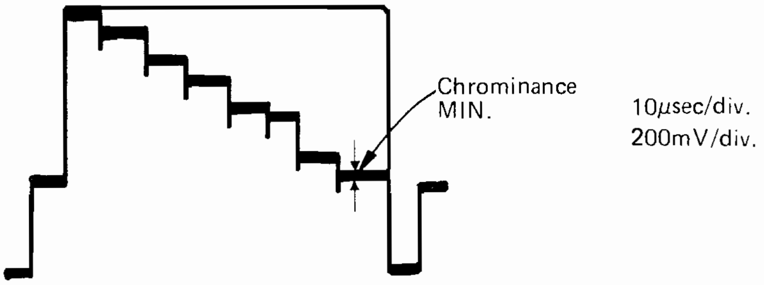


Fig. 4-4-5

2. SYNC AGC and Peak AGC

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
VR1005 VR1004	Pin (7) of S1003 Pin (23) of Q1001	Oscilloscope Colour-bar generator	EE mode

a. Connect the colour-bar generator to pin (7) of S1003.
b. Input a colour-bar signal which contains a 100% white signal.
c. Connect the oscilloscope to pin (23) of Q1001.
d. Adjust VR1005 so that it is 0.90 ±0.05Vp-p.
e. Adjust VR1004 so that it is 0.76 ±0.02Vp-p.

3. EE Level Adjustment

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
VR1001	Pin (4) of S1003	Oscilloscope Colour-bar generator	STOP mode

a. Input a colour-bar signal which contains a 100% white signal.
b. Connect the oscilloscope to pin (4) of S1003.
c. Open the video output terminal.
d. Adjust VR1001 to 2.0 ±0.1Vp-p.

4. Compressor

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
VR1003	Pin (15) of Q1001	Digital voltmeter	STOP mode

a. Connect the digital voltmeter to pin (15) of Q1001.
b. Adjust VR1003 to DC 1.05 ±0.05V.

5. Deviation

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
VR1008	Video output terminal	Oscilloscope Colour-bar generator Alignment cassette. (VJ-0113)	PLAY mode

a. Load the alignment cassette and playback the colour-bar signal.

b. Playback level confirm so that is 2.0 ±0.1Vp-p.

c. Input a color-bar signal which contains a 100% white signal.
It is recording and playback.

d. Adjust VR1008 so that the video output level is 2.0 ±0.1Vp-p.
At this time, open the video output terminal.

6. Carrier Frequency Setting

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
VR1002	Pin (1) of S1006	Frequency counter	EE mode

a. Input a non-input signal so that the VCR is set to the EE mode.

b. Connect the frequency counter to pin (1) of S1006.

c. Adjust VR1002 to be 3850 kHz ±50 kHz.

7. White Clip and Dark Clip

Adjustment location	Measurement poin	Measurement equipment	Adjustment condition
VR1006 VR1007	Pin (7) of Q1001	Oscilloscope Colour-bar generator	STOP mode

a. By means of a signal generator, input a signal containing a large high-frequency component such as a monoscope or Phillips pattern.

b. Connect the oscilloscope to pin (7) of Q1001.

c. Adjust VR1006 so that, supposing that the interval between the sync tip and the white peak is 100%, the interval between the sync tip and the white overshoot becomes 220 ±10%.

d. Adjust VR1007 so that the interval the sync tip and the dark overshooting becomes 80 ±10%.

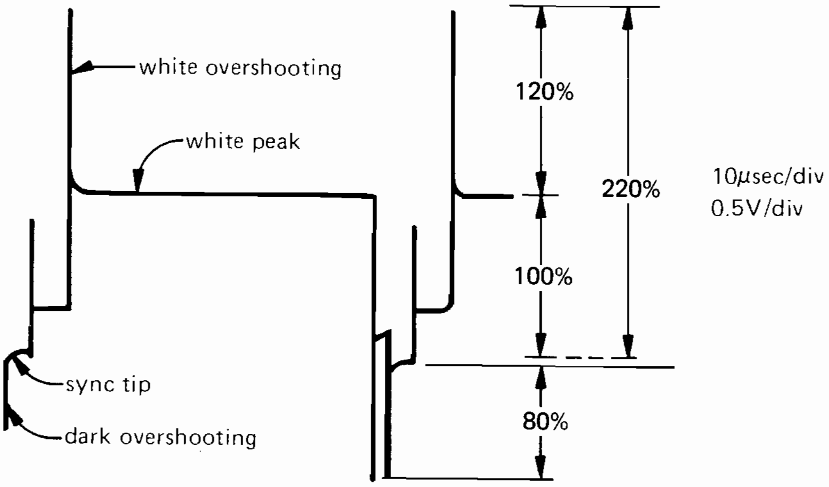


Fig. 4-4-6.

8. Y System Comb Noise Canceller

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
VR1011	Pin (5) of Q1003	Oscilloscope Alignment cassette (VJ-0113)	PLAY mode

a. Load the alignment cassette (VJ-0113) and playback the colour-bar signal.
b. Connect the oscilloscope to pin (5) of Q1003 and observe the waveform in the H (horizontal) period.
c. Adjust VR1011 so that the video signal is cancelled and only the noise component remains.

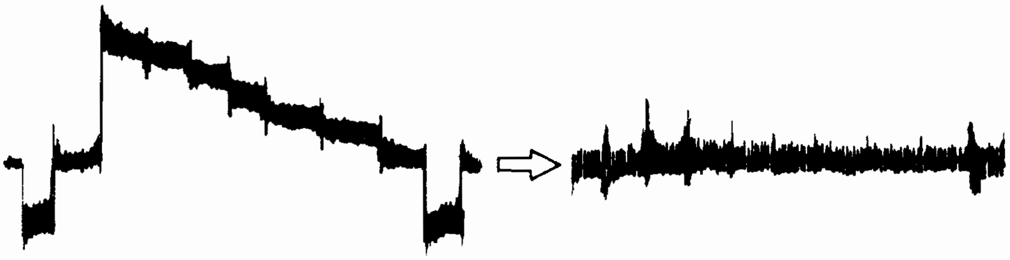


Fig. 4-4-7

9. Expander

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
VR1009	Pin (18) of Q1002	Digital voltmeter	PLAY mode

a. Connect the digital voltmeter to pin (18) of Q1002.
b. Adjust VR1009 to DC 1.0 ±0.05V.

10. Playback Level

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
VR1010	Pin (4) of S1003	Oscilloscope Alignment cassette (VJ-0113)	PLAY mode

a. Load the alignment cassette (VJ-0113) and playback the colour-bar signal.
b. Connect the oscilloscope to pin (4) of S1003.
c. Terminate the video output terminal at 75 ohms.
d. Adjust VR1010 to 2.0 ±0.1V-p-.

11. Audio Muting

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
T1003	Colector of Q1023	Oscilloscope Colour-bar generator	EE mode

a. Input the colour-bar signal, switch to EE mode.
b. Connect the oscilloscope to colector of Q1023.
c. Adjust T1003 so that the amplitude of the waveform is maximized.
d. Confirm that the voltage of colector of Q1021 is 8.0V or more in the no-input condition.
[This adjustment need only West Germany.]

[ADJUSTMENT FOR THE VD-2]

1. VCO Free Oscillation Frequency

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
VC1201	Pin (23) of Q1202	Oscilloscope Colour-bar generator	PLAY mode

a. Input a non-input signal and the VCR to the PLAY mode.
b. Input DC +6V to pin (23) of Q1202.
c. Connect the frequency couner to pin (26) of Q1202.
d. Adjust VR1202 so that the counter display reads 687.5 ±3 kHz.

2. Comb Filter

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
T1205 VR1204	——	Alignment cassette (VJ-0113)	PLAY mode

a. Load the alignment cassette and playback the colour-bar signal.
b. Alternately adjust VR1204 and T1205 until crosstalk (a black striped pattern) disappears on the monitor screen.

3. Reference Oscillation Frequency

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
T1204	Emiter of Q1214	Frequency counter	PLAY mode

a. Input a non-input signal and set the VCR to PLAY mode.
b. Connect the frequency counter to emitter of Q1214.
c. Adjust T1204 to 4.433619 MHz ±5 Hz.

8. Idler Band Pass Filter (5.12-MHz B.P.F.)

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
T1208 T1209	Pin (21) of Q1201	Oscilloscope Colour-bar generator	EE mode

a. Input the colour-bar signal.

b. Connect the oscilloscope to pin (21) of Q1201.

c. Alternately adjust T1209 and T1208 so that the waveform becomes a well-shaped sine wave and the amplitude of the waveform is maximized.

9. Carrier Leak Offset

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
VR1201	Pin (21) of Q1201	Oscilloscope Colour-bar generator	EE mode

a. Input the colour-bar signal and set the VCR to the EE mode.

b. Connect the oscilloscope to pin (21) of Q1201.

c. Adjust VR1201 so that the carrier leak is minimized.

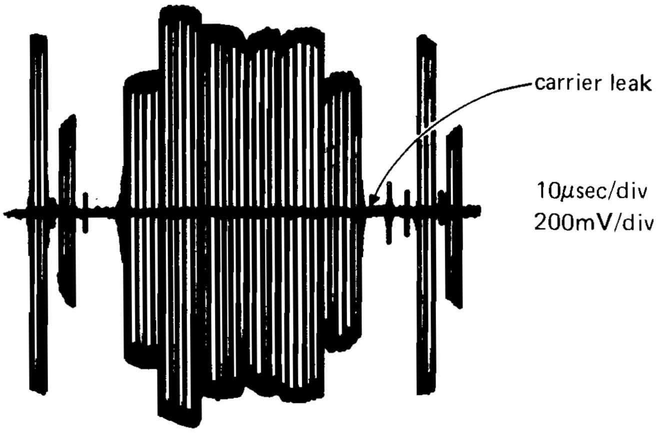


Fig. 4-4-8

4. VXO Free Oscillation Frequency

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
T1206	Emiter of Q1214	Frequency counter Colour-bar generator	EE mode

a. Input a white (100%) or black (0%) signal. At the time, burst signal is nothing.
b. Connect the frequency counter to emitter of Q1214.
c. Adjust T1206 to 4.433619 MHz ±10 Hz.

5. VCO Free Oscillation Frequency of Special Playback

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
VR1209	Pin (8) of Q1204	Frequency counter	EE mode

a. Input a non-input signal and the VCR to the EE mode.
b. Connect the frequency counter to pin (8) of Q1204.
c. Adjust VR1209 so that the counter display reads 15,625 ±10 Hz.

6. Burst Tunning

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
T1203	Pin (24) of Q1201	Oscilloscope Colour-bar generator	EE mode

a. Input the colour-bar signal, and set the VCR to the EE mode.
b. Connect the oscilloscope to pin (24) of Q1201.
c. Adjust T1203 so that the DC level is maximized.

7. ACC Setting

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
VR1205	Pin (8) of Q1204	Oscilloscope Colour-bar generator	EE mode

a. Input the colour-bar signal and connect the oscilloscope to pin (8) of Q1204.
b. Adjust VR1205 so that it is 750 ±30mVp-p.

10. Chrominance Recording Current

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
VR1203	Emitter of Q1217	Oscilloscope Colour-bar generator	EE mode

a. Input the colour-bar signal and set the VCR to the EE mode.
b. Connect the oscilloscope to emitter of Q1217.
c. Adjust VR1203 to 0.35 ±0.05Vp-p.

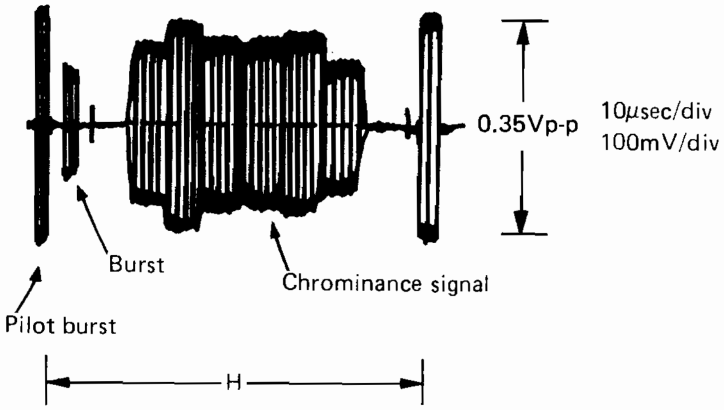

0.35Vp-p
10μsec/div
100mV/div
Burst
Chrominance signal
Pilot burst
H

Fig. 4-4-9

11. Pilot Burst Signal Level

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
VR1202	Emiter of Q1217	Oscilloscope Colour-bar generator	EE mode

a. Input the colour-bar signal and connect the oscilloscope to emitter of Q1217.
b. Adjust VR1202 so that the pilot burst level becomes equivalent to the chrominance level.
c. Confirm that the pilot burst is within the H-sync (horizontal synchronizing signal) and that the phase of the chrominance signal is locked.

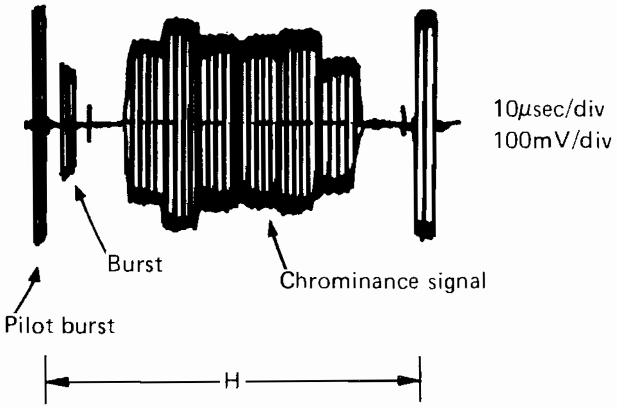

10μsec/div
100mV/div
Burst
Chrominance signal
Pilot burst
H

Fig. 4-4-10

12. 1 H Delay in Playback Variations

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
VR1206 T1207	Pin 21 of Q1204 Pin 19 of Q1204	Alignment cassette (VJ-0079) Oscilloscope	EE mode

a. Load the alignment cassette (VJ-0079) and playback the colour-bar signal.

b. Connect CH1 and CH2 of an oscilloscope to pin 21 and pin 19 of Q1204, and substract.

c. While watching the monitor screen, alternately adjust VR1206 and T1207 until the chrominance level decreases to the smallest value.

13. Reinsertion burst width

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
VR1213	Pin (27) of Q1204	Oscilloscope Colour-bar generator	PLAY mode

a. Input the colour bar signal and set pin (1) of Q1204 to "HIGH".

b. Adjust VR1213 so that the burst width of pin (27) of Q1204 becomes $3.0 \pm {}^{0.5}_{0}$ μs.

14. A P C Offset

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
VR1207	Pin (23) of Q1202	Oscilloscope Alignment cassette (VJ-0113)	PLAY mode

a. Load the alignment cassette (VJ-0113) and playback the colour-bar signal.

b. Connect the oscilloscope to pin (23) of Q1202.

c. Connect the trigger pulse for waveform observation to TP1238 (RF switching pulse).

d. Adjust VR1207 so that the level difference between the waveform of channel A and that of channel B becomes 0.

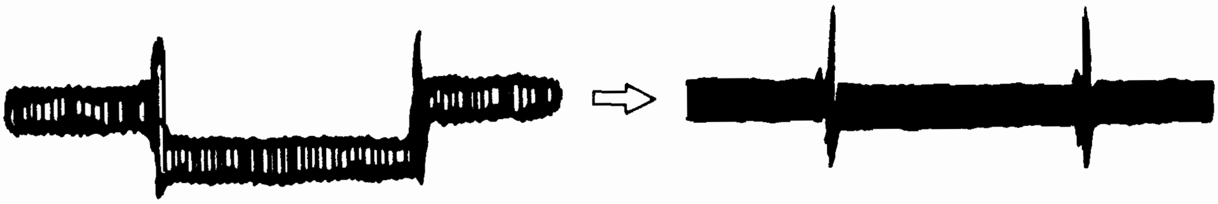


Fig. 4-4-10

15. Phase of the Re-inserted Burst Signal

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
VR1211	Pin (15) of Q1204 (CH) Pin (27) of Q1204 (CH2)	Alignment cassette (VJ-0113) Oscilloscope	PLAY mode

a. This determines the colour bar playback condition and playback variations H.

b. Connect CH1 of the oscilloscope to pin (15) of Q1204, and CH2 to pin (27) of Q1204.

c. While confirming that the amplitude of the chrominance output wave from pin (27) of Q1204 (CH2) is not too small, adjust VR1211 until the wave formation of pin (15) of Q1204 (CH1) becomes small, as shown in the diagram.

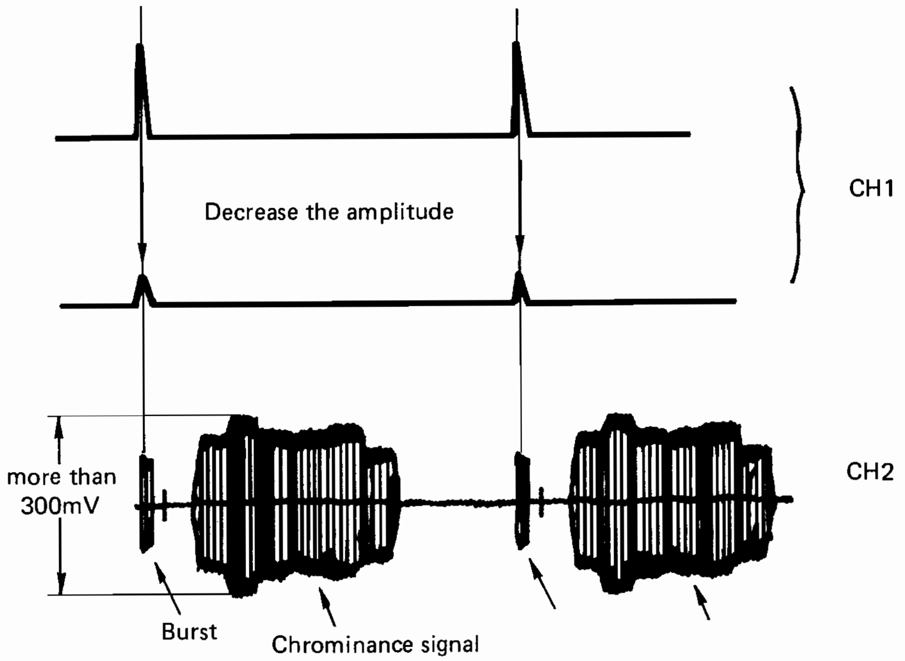


Fig. 4-4-11

16. Amplitude of the Re-inserted Burst Signal

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
VR1210	Pin (15) of Q1204 (CH1) Pin (27) of Q1204 (CH2)	Alignment cassette (VJ-0113) Oscilloscope	PLAY mode

As in the previous section, as playback variations switch between HIGH and LOW, adjust VR1210 until the re-inserted burst of TP26 (CH2) wave formation is the same level as the true burst.

17. Burst Phase Detection Range

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
VR1212	———	———	PLAY mode
Watch the playback image during PICTURE SEARCH, and adjust VR1212 until the colour is normal and there is no colour skip in sections outside of the noise bars.			

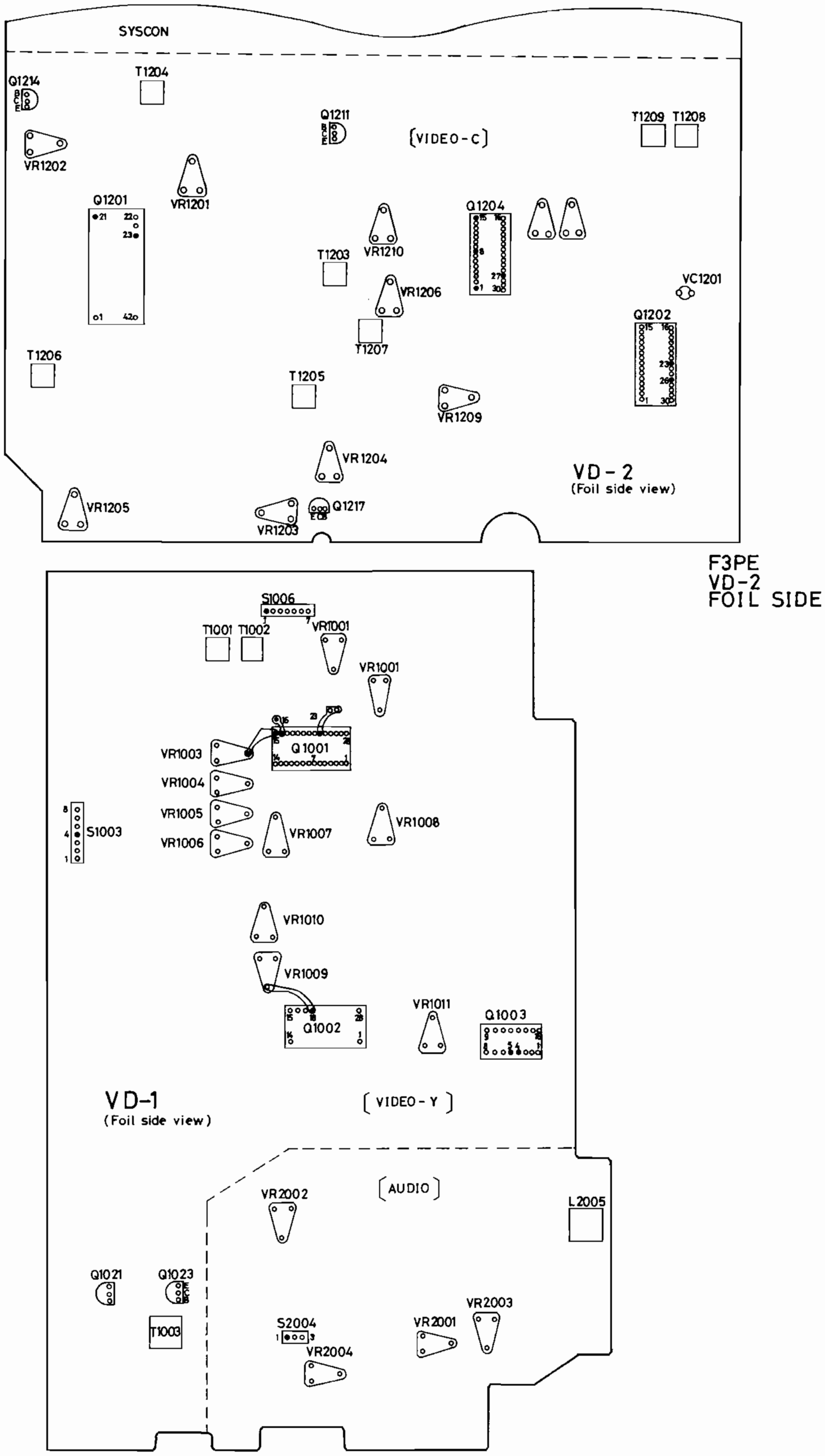

SYSCON
Q1214
T1204
Q1211
(VIDEO-C)
T1209
T1208
VR1202
Q1201
VR1201
Q1204
VR1210
T1203
VC1201
VR1206
Q1202
T1207
T1206
T1205
VR1209
VR1204
VD-2
(Foil side view)
VR1205
Q1217
VR1203
F3PE
VD-2
FOIL SIDE
S1006
T1001
T1002
VR1001
VR1001
Q1001
VR1003
VR1004
VR1005
S1003
VR1006
VR1007
VR1008
VR1010
VR1009
VR1011
Q1003
Q1002
VD-1
(Foil side view)
(VIDEO-Y)
(AUDIO)
VR2002
L2005
Q1021
Q1023
VR2003
T1003
S2004
VR2001
VR2004

Fig. 4-4-12 VD-1 and VD-2 Circuit board

E. AUDIO CIRCUIT (VD-1 CIRCUIT BOARD) (Refer to Fig. 4-5-3.)

1. Bias Current (REC and AUD DUB)

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
VR2003 L2005	TP3801 (hot) TP3802 (earth)	Vacuum-tube voltmeter Video cassette	REC mode AUD DUB mode

a. Load a video cassette, and then set the VCR to the REC mode with no signal. (The input signal can be cut out by simply connecting a blank plug to the audio input terminal.)

b. Connect the vacuum-tube voltmeter to TP3802 (earth) and TP3801 (hot) of the MC-6 circuit board.

c. Adjust VR2003 to 17mV (170μA).

d. In the above condition set the VCR to audio dubbing, adjust L2005, and set the voltage for TP3801 and TP3802 to 17mV.

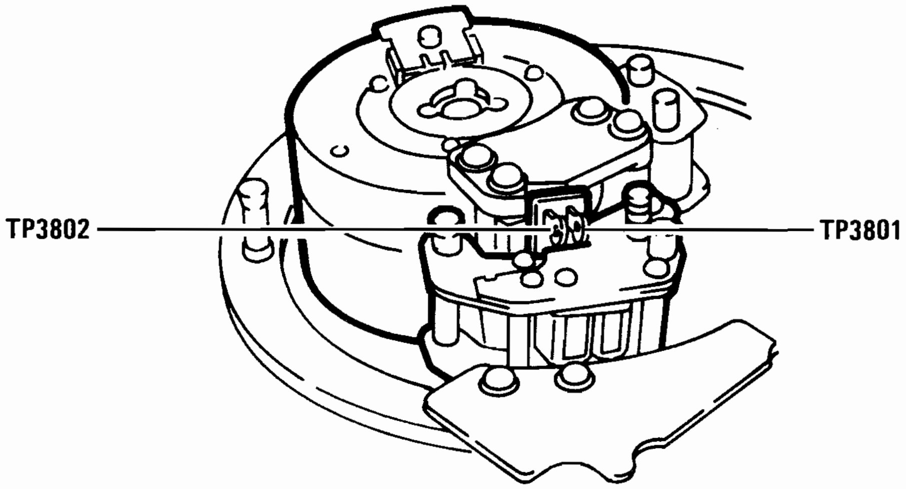


Fig. 4-5-1

2. Recording Current

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
VR2002	TP3801 (hot) TP3802 (earth)	Vacuum-tube voltmeter Audio frequency oscillator Video cassette	REC mode

a. Load a video cassette, and then set the VCR to the REC mode.

b. Short circuit base of Q2012 and pin (4) of S2005 of the VD-1 circuit board (audio circuit) so that oscillation is stopped.

c. Connect the audio frequency oscillator to the audio input terminal of the VCR, and set the output of the oscillator to 1 kHz,–10dBm (0.25Vrms).

d. Connect the vacuum-tube voltmeter to TP3802 (earth) and TP3801 (hot) of the MC-6 circuit board.

e. Adjust VR2002 so that the recording current is 30μArms (3.0 mV).

3. Playback Equalizer and Overall Frequency Response

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
VR2001	Audio output terminal	Oscilloscope Audio frequency oscillator Video cassette	REC mode PLAY mode

a. Load a video cassette, and then set the VCR to the REC mode.

b. Connect the audio frequency oscillator to the audio input terminal of the VCR and set the output to 333 Hz,-25dBm.

c. Record the 333-Hz signal for approximately 10 seconds. In the same manner, record 1-kHz signal and a 3-kHz signal.

d. Connect the oscilloscope to the audio output terminal, and then set the VCR to the PLAY mode.

e. Adjust VR2001 so that the playback output of the 333-Hz signal, the 1-kHz signal, and the 3-kHz signal are all as equivalent as possible.

f. Confirm that the output for 50 Hz, 100 Hz, 5 kHz, 7 kHz, and 10 kHz are all within the standard values given below.

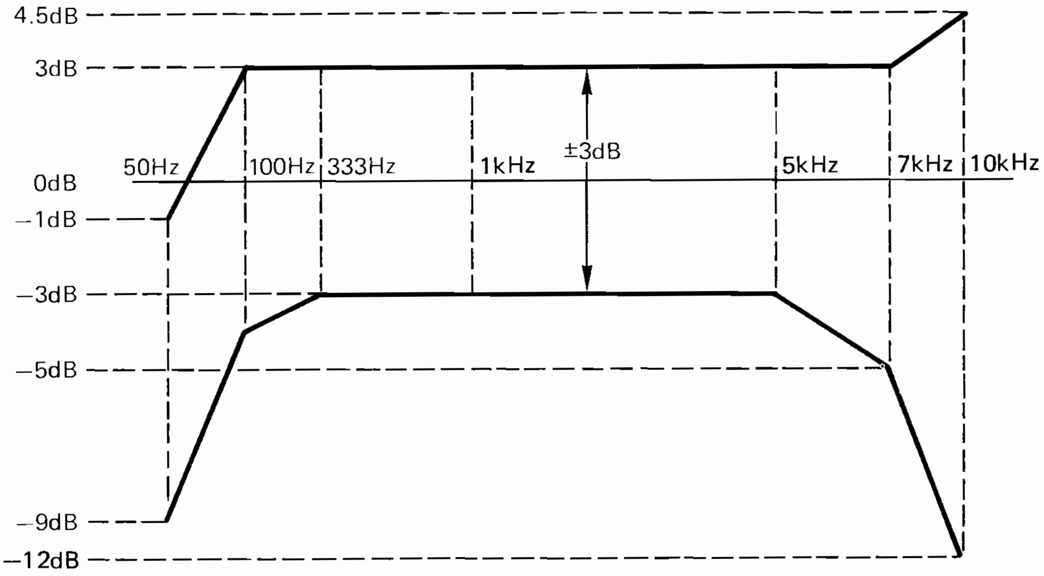


Fig. 4-5-2

4. Recording and Playback Output Levels

Adjustment location	Measurement point	Measurement equipment	Adjustment condition
VR2004	AUDIO OUT	Vacuum-tube voltmeter Audio frequency oscillator Video cassette	REC mode PLAY mode

a. Load a cassette, and then set the VCR to the REC mode.

b. Connect the audio frequency oscillator to the audio input terminal of the VCR and set the oscillator output to 1 kHz,-10dBm.

c. Connect the vacuum-tube voltmeter to the audio output terminal, wait until the EE mode output stabilizes, and then change from the REC mode to the PLAY mode.

d. Adjust VR2004 so that the playback output is equivalent to that of the EE mode.

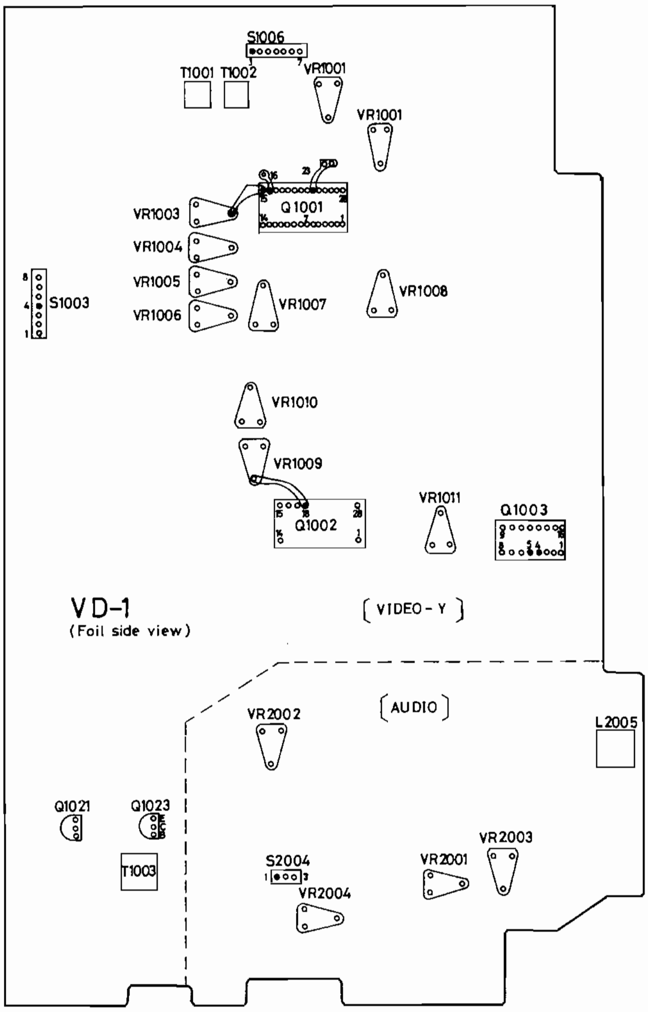

S1006
1
7
T1001
T1002
VR1001
VR1001
16
23
15
28
14
7
1
Q1001
VR1003
VR1004
VR1005
VR1006
VR1007
VR1008
8
4
1
S1003
VR1010
VR1009
VR1011
Q1002
Q1003
VD-1
(Foil side view)
VIDEO-Y
VR2002
AUDIO
L2005
Q1021
Q1023
T1003
S2004
VR2004
VR2001
VR2003

Fig. 4-5-3 VD-1 Circuit Board (Foil side view)

MEMO

SANYO ELECTRIC TRADING CO., LTD.
33, Hiyoshi-cho 2-chome, Moriguchi-shi,
Osaka-fu, 570 Japan

APR./'82/5000 HA Printed in Japan

Teil 2

PARTS LIST & CIRCUIT DIAGRAMS

COLOUR VIDEO CASSETTE RECORDER

SANYO

VTC 5400P

Beta

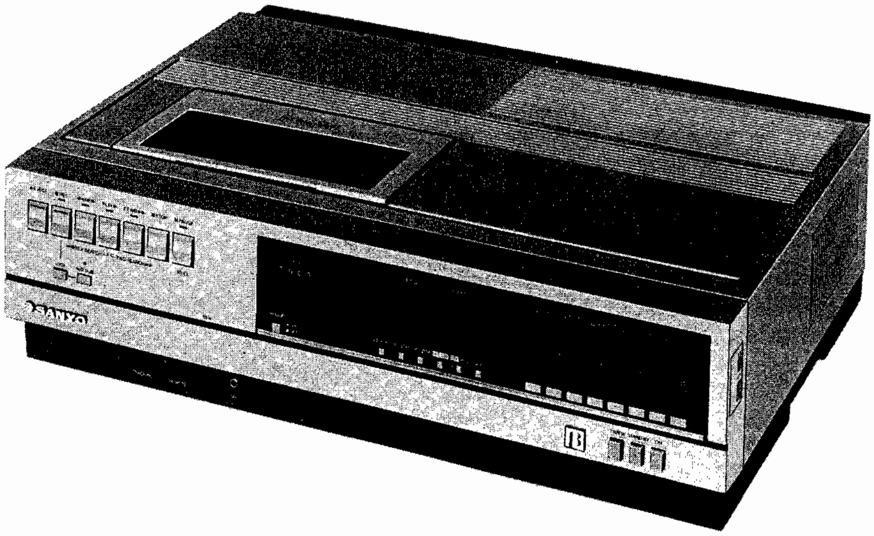


TABLE OF CONTENTS

Page
ACCESSORIES 1
PACKING MATERIALS 1
CABINET PARTS 2
FRONT CONTROL & REAR TERMINAL PARTS 3
RIGHT SIDE PCB.'s PARTS 4
BOTTOM & LEFT SIDE PCB.'s PARTS 5
DRUM, CAPSTAN & PINCH ROLLER PARTS 6
CASSETTE HOLDER MECHANISM PARTS 7
REEL DRIVE MECHANISM PARTS 8
EJECT & PINCH ROLLER PRESSURE MECHANISM PARTS 10
ELECTRICAL PARTS
(1) VD-1 PCB. 12
(2) VD-2 PCB. 15
(3) VP-1 PCB. 20
(4) SY-2 PCB. 21
(5) MC-1 PCB. 21
(6) SV-1 PCB. 21
(7) SV-4 PCB. 23
(8) PW-1 PCB. 25
(9) PW-2 PCB. 25
(10) TN-1 PCB. 26
(11) TN-2 PCB. 26
(12) TN-3 PCB. 27
(13) TM-1 PCB. 27
(14) TB-2 PCB. 27
CIRCUIT DIAGRAMS

CIRCUIT DIAGRAMS & PRINTED CIRCUIT BOARDS

VTC5400P(CONTINENT)
VTC5400P(U.K.)
VTC5400P(H.K.)
VTC5400P(South Africa)
VTC5400P(Australia)
VTC5400P(New Zealand)
VTC5400P(Indonesia)
VTC5400PB(Benelux)

TABLE OF CONTENTS

OVER ALL WIRING DIAGRAM Ⓐ

P.C.B. VD-1 VIDEO (I) CIRCUIT
P.C.B. VD-1 AUDIO CIRCUIT Ⓑ

P.C.B. VD-1 VIDEO (I)/AUDIO
P.C.B. VD-1 VIDEO (I) CIRCUIT Ⓒ

P.C.B. VP-1 VIDEO PRE-AMP CIRCUIT
P.C.B. VD-2 SYSTEM CONTROL CIRCUIT Ⓓ

P.C.B. VD-2 VIDEO (II)/SYSTEM CONTROL
P.C.B. VD-2 VIDEO (II) CIRCUIT Ⓔ

P.C.B. SV-1 SERVO (I) CIRCUIT
P.C.B. SV-4 SERVO (II) CIRCUIT Ⓕ

P.C.B. SY-2 OPERATION SWITCH CIRCUIT
P.C.B. PW-1 · 2 POWER SUPPLY CIRCUIT Ⓖ

P.C.B. TM-1 TIMER CIRCUIT
P.C.B. TN-1 IF CIRCUIT Ⓗ

P.C.B. TN-2 · 3 CHANNEL PRESET/SELECT CIRCUIT
P.C.B. TB-2 TERMINAL CIRCUIT Ⓘ

P.C.B. TN-2 · 3 CHANNEL PRESET/SELECT CIRCUIT Ⓙ

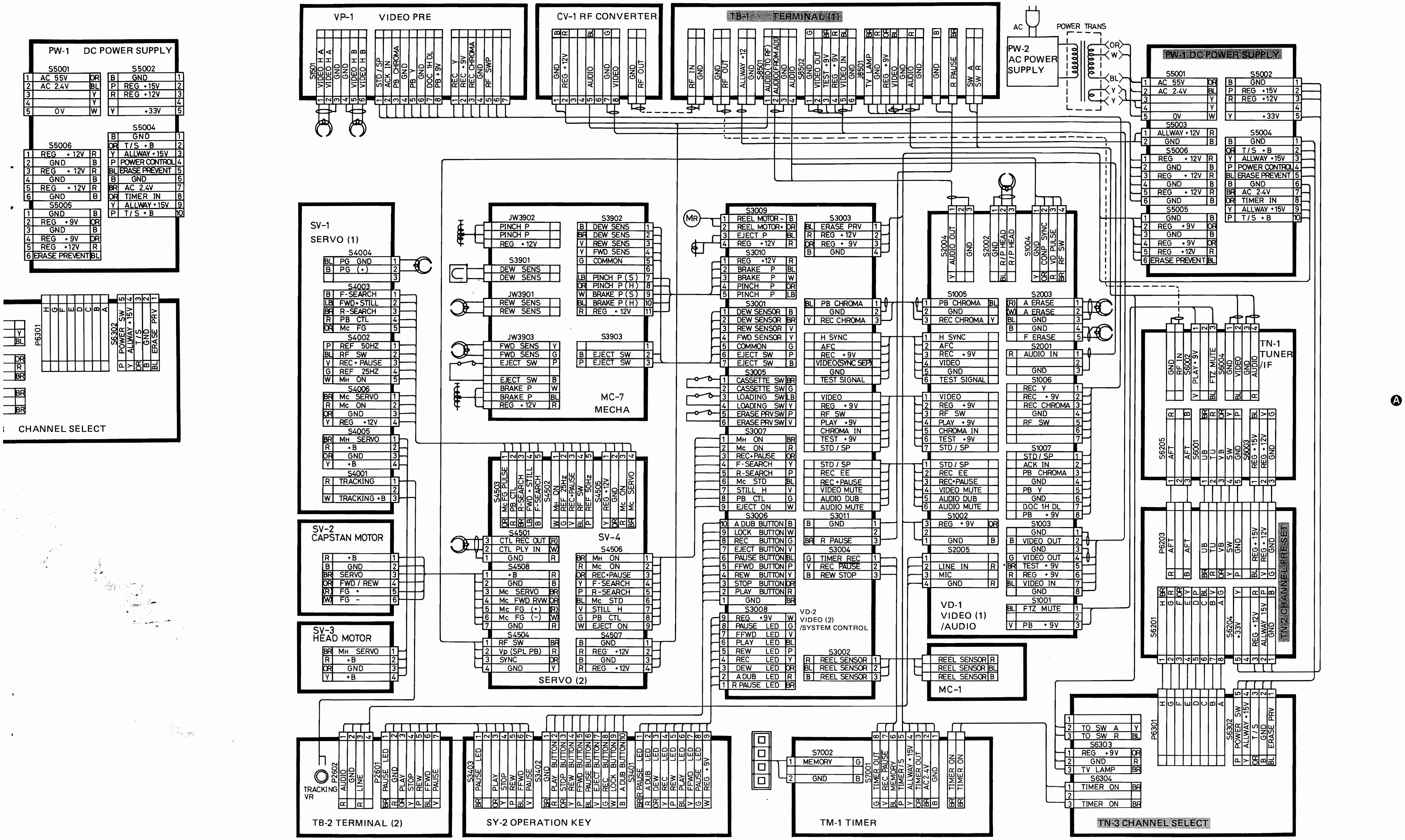
CIRCUIT DIAGRAMS & PRINTED CIRCUIT BOARDS

VTC5400P(CONTINENT)
VTC5400P(U.K.)
VTC5400P(H.K.)
VTC5400P(South Africa)
VTC5400P(Australia)
VTC5400P(New Zealand)
VTC5400P(Indonesia)
VTC5400PB(Benelux)

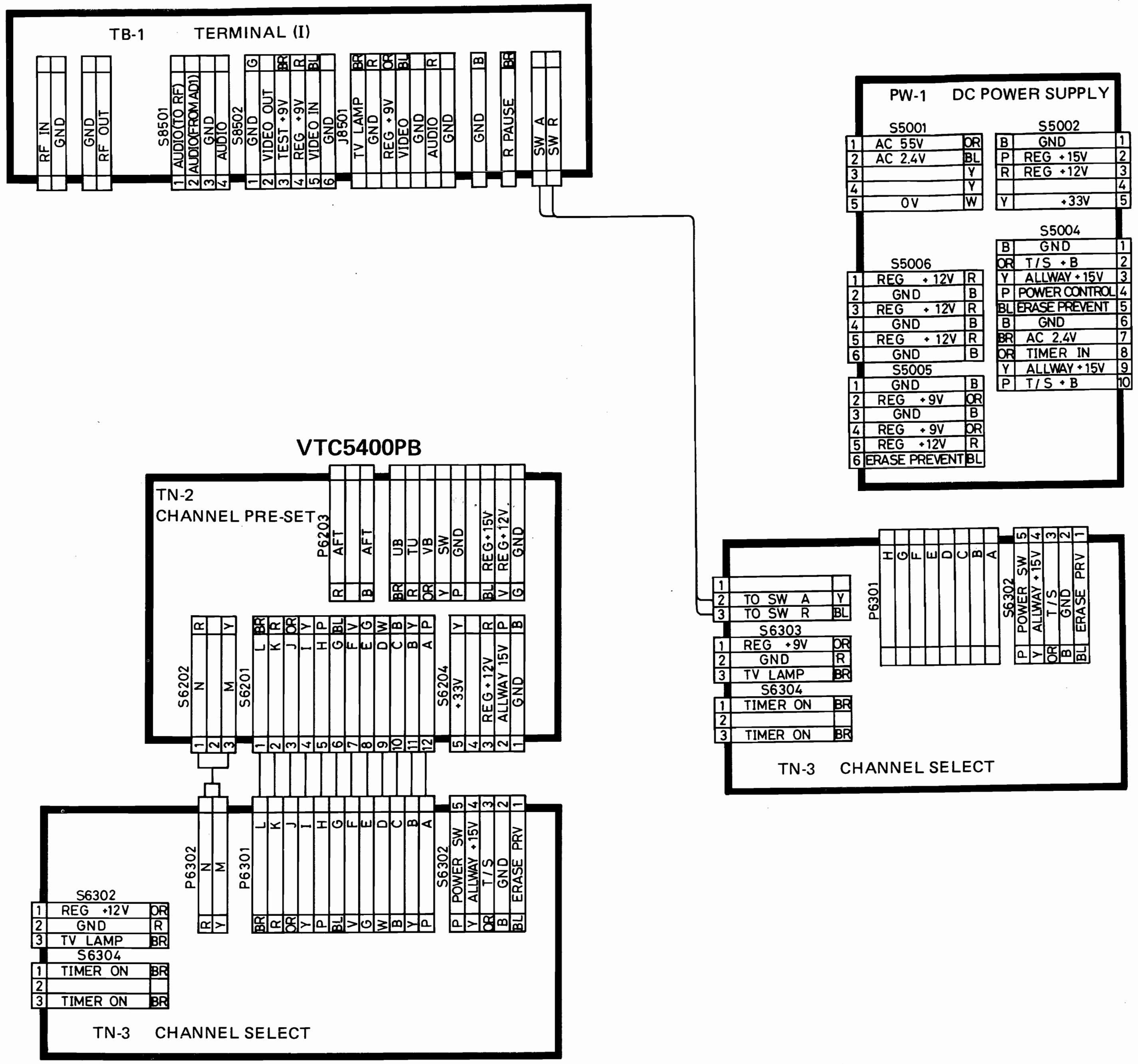
TABLE OF CONTENTS

OVER ALL WIRING DIAGRAM		Ⓐ
P.C.B. VD-1	VIDEO (I) CIRCUIT	Ⓑ
P.C.B. VD-1	AUDIO CIRCUIT	
P.C.B. VD-1	VIDEO (I)/AUDIO	Ⓒ
P.C.B. VD-1	VIDEO (I) CIRCUIT	
P.C.B. VP-1	VIDEO PRE-AMP CIRCUIT	Ⓓ
P.C.B. VD-2	SYSTEM CONTROL CIRCUIT	
P.C.B. VD-2	VIDEO (II)/SYSTEM CONTROL	Ⓔ
P.C.B. VD-2	VIDEO (II) CIRCUIT	
P.C.B. SV-1	SERVO (I) CIRCUIT	Ⓕ
P.C.B. SV-4	SERVO (II) CIRCUIT	
P.C.B. SY-2	OPERATION SWITCH CIRCUIT	Ⓖ
P.C.B. PW-1 · 2	POWER SUPPLY CIRCUIT	
P.C.B. TM-1	TIMER CIRCUIT	Ⓗ
P.C.B. TN-1	IF CIRCUIT	
P.C.B. TN-2 · 3	CHANNEL PRESET/SELECT CIRCUIT	Ⓘ
P.C.B. TB-2	TERMINAL CIRCUIT	
P.C.B. TN-2 · 3	CHANNEL PRESET/SELECT CIRCUIT	Ⓙ

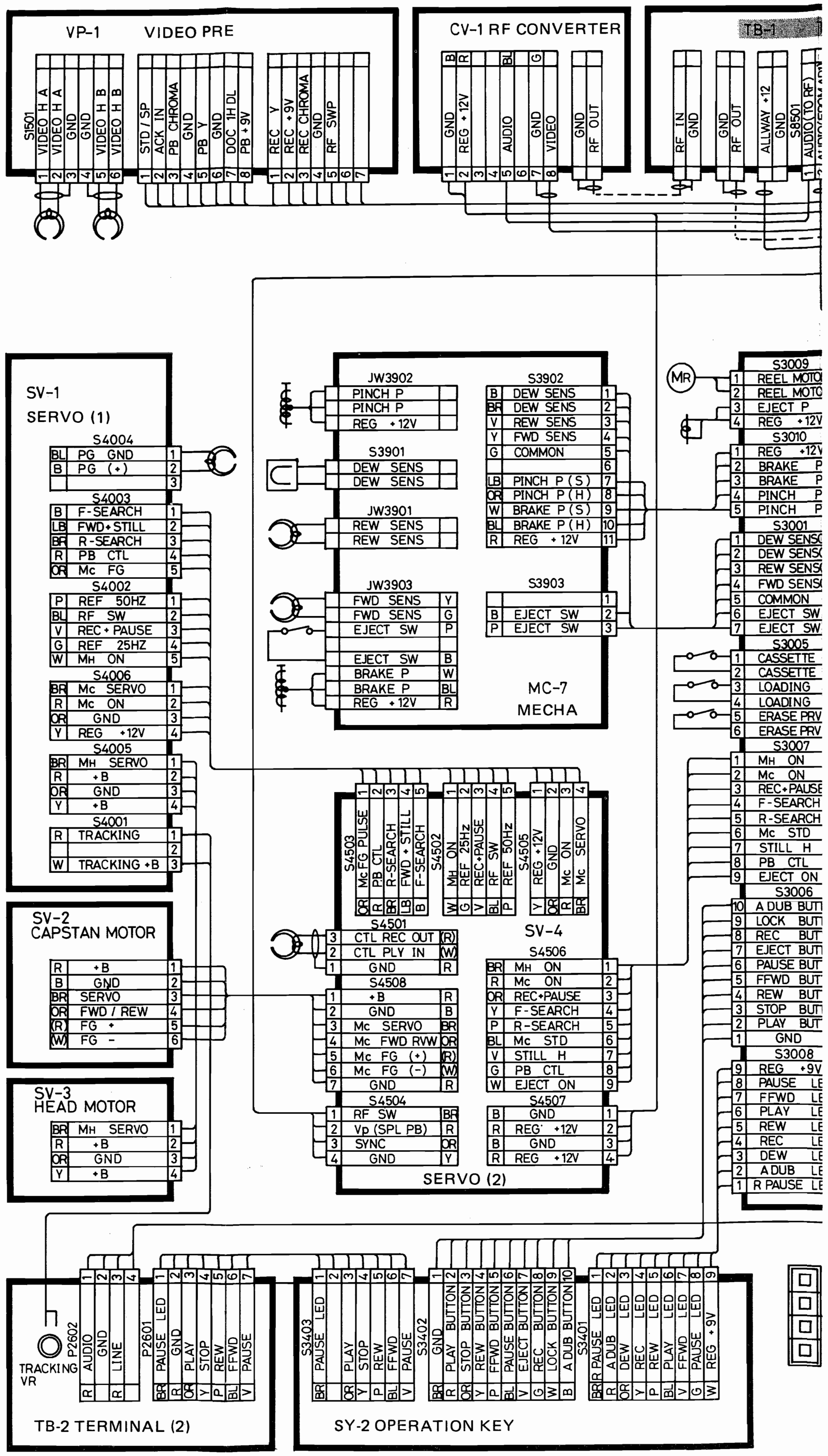
OVER ALL WIRING DIAGRAM


PW-1 DC POWER SUPPLY
S5001
AC 55V
AC 2.4V
0V
S5002
GND
REG +15V
REG +12V
+33V
S5004
GND
T/S +B
ALLWAY +15V
POWER CONTROL
ERASE PREVENT
GND
AC 2.4V
TIMER IN
ALLWAY +15V
T/S +B
S5006
REG +12V
GND
S5005
GND
REG +9V
REG +12V
ERASE PREVENT
P6301
S6302
POWER SW
ALLWAY +15V
T/S
GND
ERASE PRV
CHANNEL SELECT
VP-1 VIDEO PRE
S1501
VIDEO H A
GND
VIDEO H B
STD / SP
ACK IN
PB CHROMA
PB Y
DOC 1H DL
PB +9V
REC Y
REC +9V
REC CHROMA
RF SWP
CV-1 RF CONVERTER
REG +12V
AUDIO
VIDEO
RF OUT
TB-1 TERMINAL (1)
RF IN
ALLWAY +12
AUDIO (TO RF)
AUDIO (FROM ADJ)
S8502
S8501
VIDEO OUT
TEST +9V
REG +9V
VIDEO IN
J8501
TV LAMP
R PAUSE
SW A
SW R
AC
POWER TRANS
PW-2 AC POWER SUPPLY
OR
W
BL
Y
S5003
ALLWAY +12V
SV-1 SERVO (1)
S4004
PG GND
PG (+)
S4003
F-SEARCH
FWD+STILL
R-SEARCH
PB CTL
Mc FG
S4002
REF 50HZ
RF SW
REC+PAUSE
REF 25HZ
MH ON
S4006
Mc SERVO
Mc ON
REG +12V
S4005
MH SERVO
+B
S4001
TRACKING
TRACKING +B
SV-2 CAPSTAN MOTOR
SERVO
FWD / REW
FG +
FG −
SV-3 HEAD MOTOR
MC-7 MECHA
JW3902
PINCH P
S3902
DEW SENS
REW SENS
FWD SENS
COMMON
PINCH P (S)
PINCH P (H)
BRAKE P (S)
BRAKE P (H)
S3901
JW3901
JW3903
EJECT SW
BRAKE P
S3903
SV-4 SERVO (2)
S4503
Mc FG PULSE
S4502
S4505
S4501
CTL REC OUT
CTL PLY IN
S4508
Mc FWD RVW
Mc FG (+)
Mc FG (−)
S4506
Mc STD
STILL H
EJECT ON
S4504
Vp (SPL PB)
SYNC
S4507
MR
VD-2 VIDEO (2) /SYSTEM CONTROL
S3009
REEL MOTOR −
REEL MOTOR +
EJECT P
S3003
ERASE PRV
S3010
BRAKE P
S3001
DEW SENSOR
REW SENSOR
FWD SENSOR
S3005
CASSETTE SW
LOADING SW
ERASE PRV SW
S3007
REC+PAUSE
S3006
A DUB BUTTON
LOCK BUTTON
REC BUTTON
EJECT BUTTON
PAUSE BUTTON
FFWD BUTTON
REW BUTTON
STOP BUTTON
PLAY BUTTON
S3008
PAUSE LED
FFWD LED
PLAY LED
REW LED
REC LED
DEW LED
A DUB LED
R PAUSE LED
H SYNC
AFC
VIDEO (SYNC SEP)
TEST SIGNAL
CHROMA IN
STD / SP
REC EE
VIDEO MUTE
AUDIO DUB
AUDIO MUTE
S3011
S3004
TIMER REC
REC PAUSE
REW STOP
S3002
REEL SENSOR
VD-1 VIDEO (1) /AUDIO
S2004
AUDIO OUT
S2002
R/P HEAD
S1004
CONP SYNC
VD PULSE
RF SW
S1005
S2003
A ERASE
F ERASE
S2001
AUDIO IN
S1006
REC Y
S1007
ACK IN
PB Y
DOC 1H DL
S1002
S2005
LINE IN
MIC
S1003
S1001
FTZ MUTE
MC-1
TN-1 TUNER /IF
S6002
RF IN
PLAY +9V
FTZ MUTE
S6205
S6001
S6003
AFT
UB
TU
VB
SW
TN-2 CHANNEL PRE-SET
P6203
S6201
S6204
TN-3 CHANNEL SELECT
TO SW A
TO SW R
S6303
S6304
TIMER ON
TB-2 TERMINAL (2)
TRACKING VR
P2602
LINE
P2601
SY-2 OPERATION KEY
S3403
S3402
S3401
TM-1 TIMER
S7002
MEMORY
S7001
TIMER OUT
TIMER/S
AC 2.4V
A

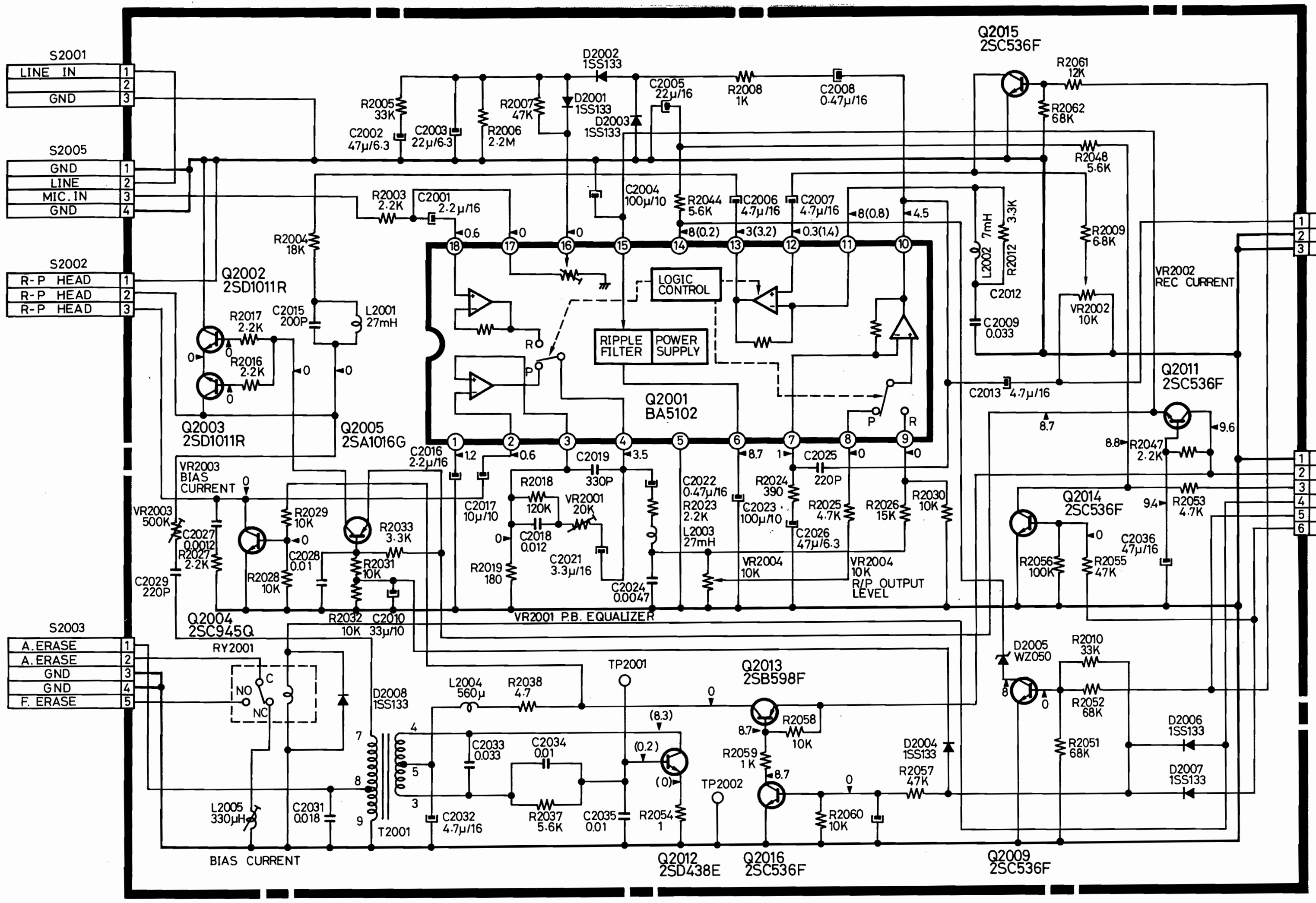
Australia, New Zealand


TB-1 TERMINAL (I)
RF IN
GND
GND
RF OUT
S8501
AUDIO(TO RF)
AUDIO(FROM ADJ)
GND
AUDIO
S8502
GND
VIDEO OUT
TEST +9V
REG +9V
VIDEO IN
GND
J8501
TV LAMP
GND
REG +9V
VIDEO
GND
AUDIO
GND
GND
R PAUSE
SW A
SW R
PW-1 DC POWER SUPPLY
S5001
AC 55V
AC 2.4V
0V
S5002
GND
REG +15V
REG +12V
+33V
S5004
GND
T/S +B
ALLWAY +15V
POWER CONTROL
ERASE PREVENT
GND
AC 2.4V
TIMER IN
ALLWAY +15V
T/S +B
S5006
REG +12V
GND
REG +12V
GND
REG +12V
GND
S5005
GND
REG +9V
GND
REG +9V
REG +12V
ERASE PREVENT
TN-3 CHANNEL SELECT
TO SW A
TO SW R
S6303
REG +9V
GND
TV LAMP
S6304
TIMER ON
TIMER ON
P6301
S6302
POWER SW
ALLWAY +15V
T/S
GND
ERASE PRV
VTC5400PB
TN-2
CHANNEL PRE-SET
P6203
AFT
AFT
UB
TU
VB
SW
GND
REG +15V
REG +12V
GND
S6202
N
M
S6201
S6204
+33V
REG +12V
ALLWAY 15V
GND
P6302
P6301
S6302
POWER SW
ALLWAY +15V
T/S
GND
ERASE PRV
S6302
REG +12V
GND
TV LAMP
S6304
TIMER ON
TIMER ON
TN-3 CHANNEL SELECT

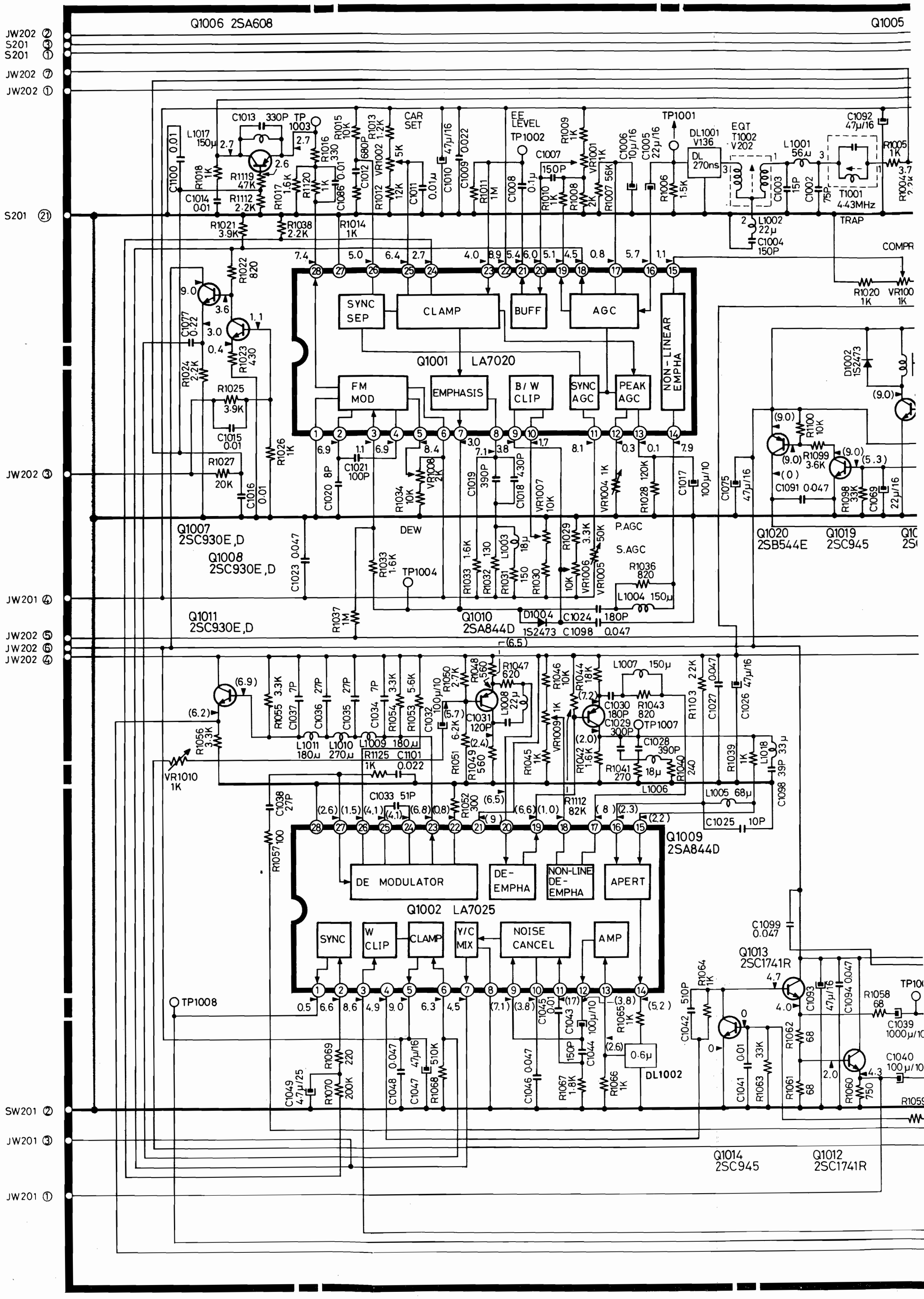
OVER ALL WIR


VP-1 VIDEO PRE
S1501
VIDEO H A
VIDEO H A
GND
GND
VIDEO H B
VIDEO H B
STD / SP
ACK IN
PB CHROMA
GND
PB Y
GND
DOC 1H DL
PB +9V
REC Y
REC +9V
REC CHROMA
GND
RF SWP
CV-1 RF CONVERTER
GND
REG +12V
AUDIO
GND
VIDEO
GND
RF OUT
TB-1
RF IN
GND
GND
RF OUT
ALLWAY +12
GND
S8501
AUDIO(TO RF)
SV-1
SERVO (1)
S4004
PG GND
PG (+)
S4003
F-SEARCH
FWD+STILL
R-SEARCH
PB CTL
Mc FG
S4002
REF 50HZ
RF SW
REC+PAUSE
REF 25HZ
MH ON
S4006
Mc SERVO
Mc ON
GND
REG +12V
S4005
MH SERVO
+B
GND
+B
S4001
TRACKING
TRACKING +B
SV-2
CAPSTAN MOTOR
+B
GND
SERVO
FWD / REW
FG +
FG -
SV-3
HEAD MOTOR
MH SERVO
+B
GND
+B
JW3902
PINCH P
PINCH P
REG +12V
S3901
DEW SENS
DEW SENS
JW3901
REW SENS
REW SENS
JW3903
FWD SENS
FWD SENS
EJECT SW
EJECT SW
BRAKE P
BRAKE P
REG +12V
S3902
DEW SENS
DEW SENS
REW SENS
FWD SENS
COMMON
PINCH P (S)
PINCH P (H)
BRAKE P (S)
BRAKE P (H)
REG +12V
S3903
EJECT SW
EJECT SW
MC-7
MECHA
MR
S3009
REEL MOTO
REEL MOTO
EJECT P
REG +12V
S3010
REG +12V
BRAKE P
BRAKE P
PINCH P
PINCH P
S3001
DEW SENS
DEW SENS
REW SENS
FWD SENS
COMMON
EJECT SW
EJECT SW
S3005
CASSETTE
CASSETTE
LOADING
LOADING
ERASE PRV
ERASE PRV
S3007
MH ON
Mc ON
REC+PAUSE
F-SEARCH
R-SEARCH
Mc STD
STILL H
PB CTL
EJECT ON
S3006
A DUB BUT
LOCK BUT
REC BUT
EJECT BUT
PAUSE BUT
FFWD BUT
REW BUT
STOP BUT
PLAY BUT
GND
S3008
REG +9V
PAUSE LE
FFWD LE
PLAY LE
REW LE
REC LE
DEW LE
A DUB LE
R PAUSE LE
S4503
Mc FG PULSE
PB CTL
R-SEARCH
FWD + STILL
F-SEARCH
S4502
MH ON
REF 25Hz
REC+PAUSE
RF SW
REF 50Hz
S4505
REG +12V
GND
Mc ON
Mc SERVO
S4501
CTL REC OUT
CTL PLY IN
GND
S4508
+B
GND
Mc SERVO
Mc FWD RVW
Mc FG (+)
Mc FG (-)
GND
S4504
RF SW
Vp (SPL PB)
SYNC
GND
SV-4
S4506
MH ON
Mc ON
REC+PAUSE
F-SEARCH
R-SEARCH
Mc STD
STILL H
PB CTL
EJECT ON
S4507
GND
REG +12V
GND
REG +12V
SERVO (2)
TRACKING VR
P2602
AUDIO
GND
LINE
P2601
PAUSE LED
GND
PLAY
STOP
REW
FFWD
PAUSE
TB-2 TERMINAL (2)
S3403
PAUSE LED
PLAY
STOP
REW
FFWD
PAUSE
S3402
GND
PLAY BUTTON
STOP BUTTON
REW BUTTON
FFWD BUTTON
PAUSE BUTTON
EJECT BUTTON
REC BUTTON
LOCK BUTTON
A DUB BUTTON
S3401
PAUSE LED
A DUB LED
DEW LED
REC LED
REW LED
PLAY LED
FFWD LED
PAUSE LED
REG +9V
SY-2 OPERATION KEY

P.C.B. VD-1 AUDIO CIRCUIT


S2001
LINE IN
GND
S2005
GND
LINE
MIC. IN
GND
S2002
R-P HEAD
R-P HEAD
R-P HEAD
S2003
A. ERASE
A. ERASE
GND
GND
F. ERASE
RY2001
Q2001
BA5102
LOGIC CONTROL
RIPPLE FILTER
POWER SUPPLY
Q2002
2SD1011R
Q2003
2SD1011R
Q2004
2SC945Q
Q2005
2SA1016G
Q2009
2SC536F
Q2011
2SC536F
Q2012
2SD438E
Q2013
2SB598F
Q2014
2SC536F
Q2015
2SC536F
Q2016
2SC536F
VR2001 P.B. EQUALIZER
VR2002 REC CURRENT
VR2003 BIAS CURRENT
VR2004 R/P OUTPUT LEVEL
D2005 WZ050
T2001
BIAS CURRENT
TP2001
TP2002
S2004
LINE OUT
GND
GND
FROM VIDEO
GND
REG + B
PLAY + B
REC + B
MUTE
A-DUB

P.C.B. VD-1 VIDEO

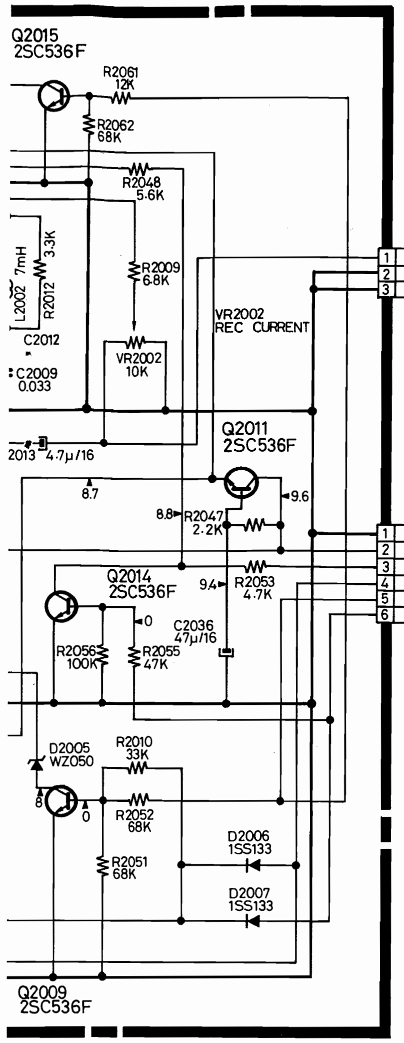

JW202
S201
JW201
SW201
Q1006 2SA608
Q1005
Q1001 LA7020
SYNC SEP
CLAMP
BUFF
AGC
NON-LINEAR EMPHA
FM MOD
EMPHASIS
B/W CLIP
SYNC AGC
PEAK AGC
Q1002 LA7025
DE MODULATOR
DE-EMPHA
NON-LINE DE-EMPHA
APERT
SYNC
W CLIP
CLAMP
Y/C MIX
NOISE CANCEL
AMP
Q1007
2SC930E,D
Q1008
2SC930E,D
Q1009
2SA844D
Q1010
2SA844D
Q1011
2SC930E,D
Q1012
2SC1741R
Q1013
2SC1741R
Q1014
2SC945
Q1019
2SC945
Q1020
2SB544E
TP1001
TP1002
TP1004
TP1007
TP1008
EE LEVEL
CAR SET
DEW
P.AGC
S.AGC
DL1001
DL1002
T1001
4.43MHz
TRAP
EQT T1002 V202
COMPR

NOTES:

1. All resistance values in "OHMS" unless otherwise noted. (K=1,000 M=1,000,000)
2. All capacitance values in "μfd" unless otherwise noted.
   p = pico farad
3. All inductance values in "mH" unless otherwise noted. μ= micro henry
4. Marks indicated in each connector indicate the following color of wire.

B	: Black	V	: Violet	BR	: Brown
R	: Red	Y	: Yellow	GR	: Green
W	: White	G	: Gray	BL	: Blue
P	: Pink	LB	: Light Blue	OR	: Orange

Ⓑ

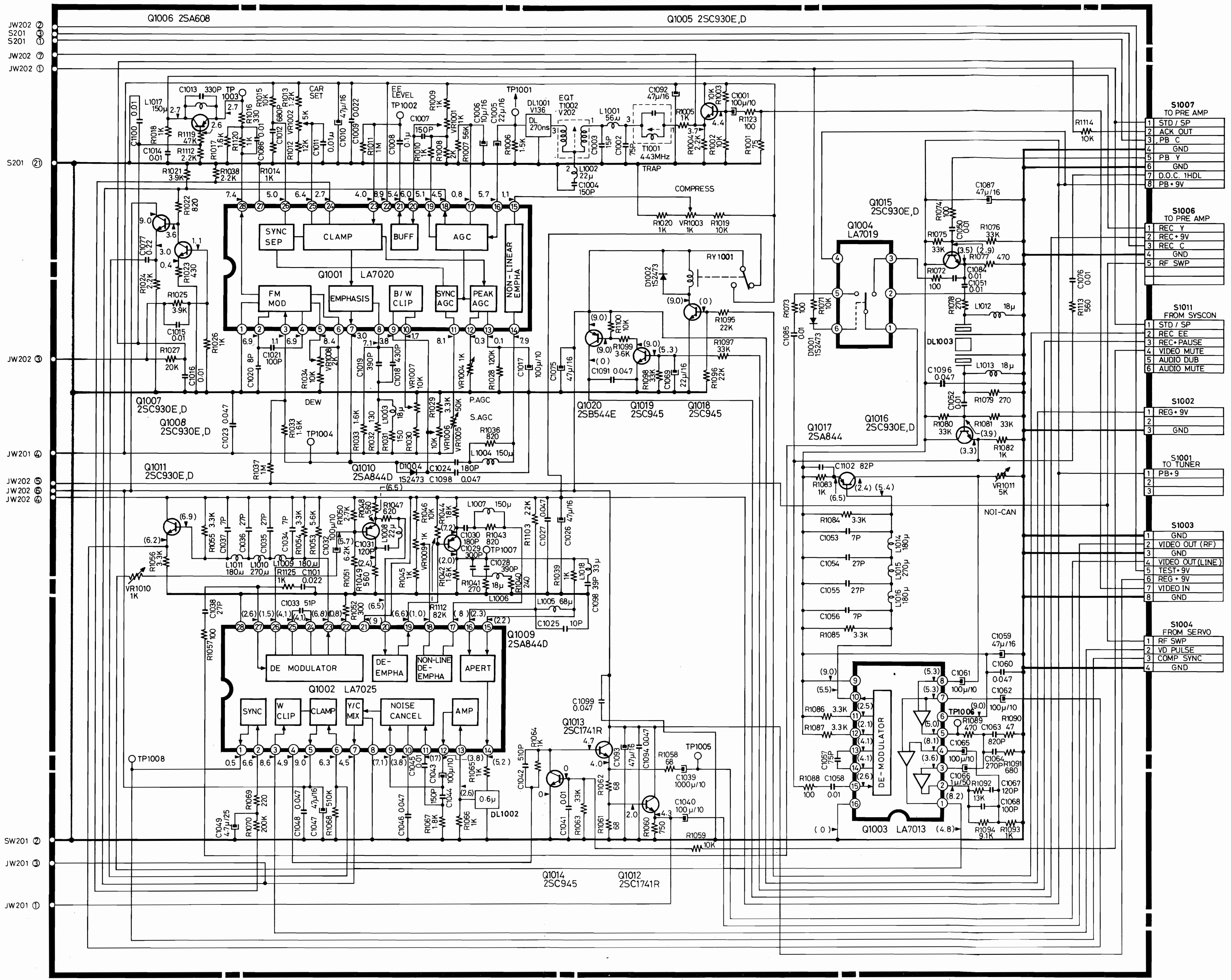

Q2015 2SC536F
R2061 12K
R2062 68K
R2048 5.6K
R2009 6.8K
VR2002 10K
VR2002 REC CURRENT
C2012
C2009 0.033
2013 4.7μ/16
Q2011 2SC536F
R2047 2.2K
Q2014 2SC536F
R2053 4.7K
C2036 47μ/16
R2056 100K
R2055 47K
D2005 WZ050
R2010 33K
R2052 68K
R2051 68K
D2006 1SS133
D2007 1SS133
Q2009 2SC536F
S2004
1 LINE OUT
2 GND
3 GND
FROM VIDEO
1 GND
2 REG + B
3 PLAY + B
4 REC + B
5 MUTE
6 A·DUB

=1,000

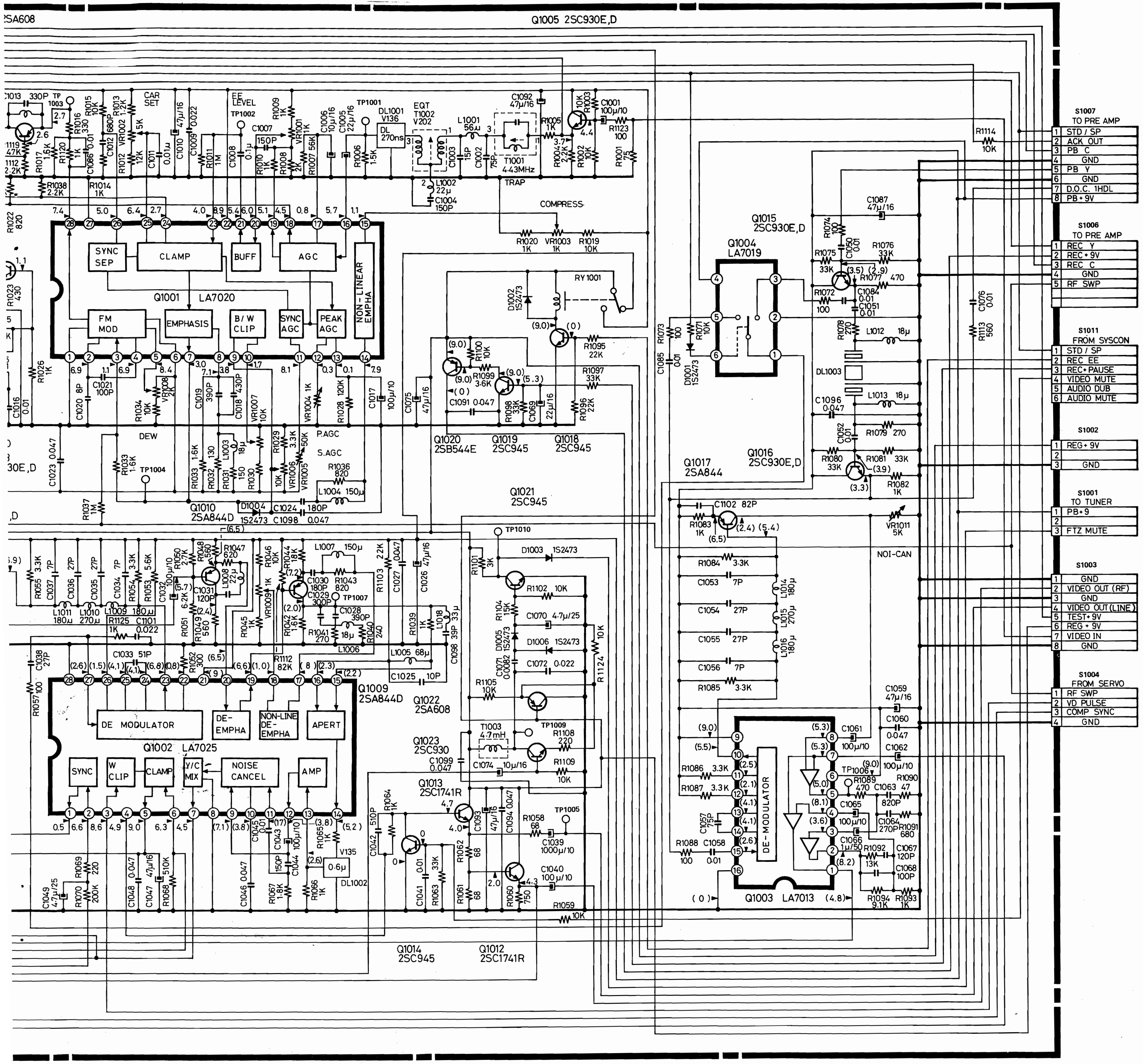
micro

lor of

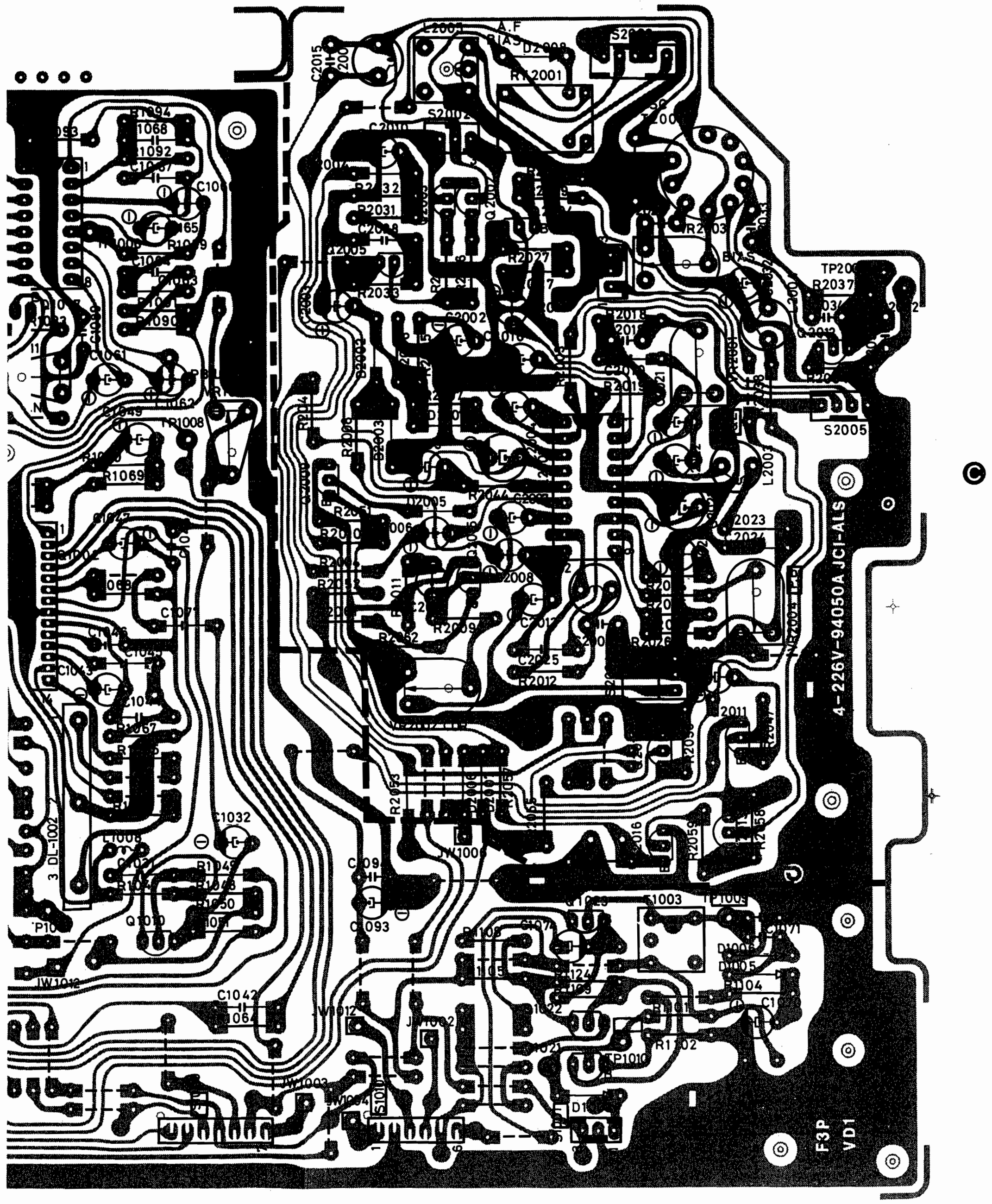
P.C.B. VD-1 VIDEO(I) CIRCUIT


Q1006 2SA608
Q1005 2SC930E,D
JW202 ②
S201 ③
S201 ①
JW202 ⑦
JW202 ①
S201 ㉑
JW202 ③
JW201 ④
JW202 ⑤
JW202 ⑥
JW202 ④
SW201 ②
JW201 ③
JW201 ①
Q1001 LA7020
SYNC SEP
CLAMP
BUFF
AGC
NON-LINEAR EMPHA
FM MOD
EMPHASIS
B/W CLIP
SYNC AGC
PEAK AGC
EE LEVEL
CAR SET
TP1001
TP1002
TP1003
TP1004
TP1005
TP1006
TP1007
TP1008
DL1001 V136 270ns
EQT T1002 V202
T1001 4.43MHz
TRAP
COMPRESS
RY1001
D1002 1S2473
Q1007 2SC930E,D
Q1008 2SC930E,D
Q1011 2SC930E,D
Q1010 2SA844D
D1004 1S2473
DEW
P.AGC
S.AGC
Q1020 2SB544E
Q1019 2SC945
Q1018 2SC945
Q1002 LA7025
DE MODULATOR
DE-EMPHA
NON-LINE DE-EMPHA
APERT
SYNC
W CLIP
CLAMP
Y/C MIX
NOISE CANCEL
AMP
Q1009 2SA844D
DL1002
Q1013 2SC1741R
Q1014 2SC945
Q1012 2SC1741R
Q1015 2SC930E,D
Q1004 LA7019
D1001 1S2473
DL1003
Q1017 2SA844
Q1016 2SC930E,D
NOI-CAN
VR1011 5K
Q1003 LA7013
DE-MODULATOR
S1007 TO PRE AMP
1 STD / SP
2 ACK OUT
3 PB C
4 GND
5 PB Y
6 GND
7 D.O.C 1HDL
8 PB + 9V
S1006 TO PRE AMP
1 REC Y
2 REC + 9V
3 REC C
4 GND
5 RF SWP
S1011 FROM SYSCON
1 STD / SP
2 REC EE
3 REC + PAUSE
4 VIDEO MUTE
5 AUDIO DUB
6 AUDIO MUTE
S1002
1 REG + 9V
2
3 GND
S1001 TO TUNER
1 PB + 9
2
3
S1003
1 GND
2 VIDEO OUT (RF)
3 GND
4 VIDEO OUT (LINE)
5 TEST + 9V
6 REG + 9V
7 VIDEO IN
8 GND
S1004 FROM SERVO
1 RF SWP
2 VD PULSE
3 COMP SYNC
4 GND

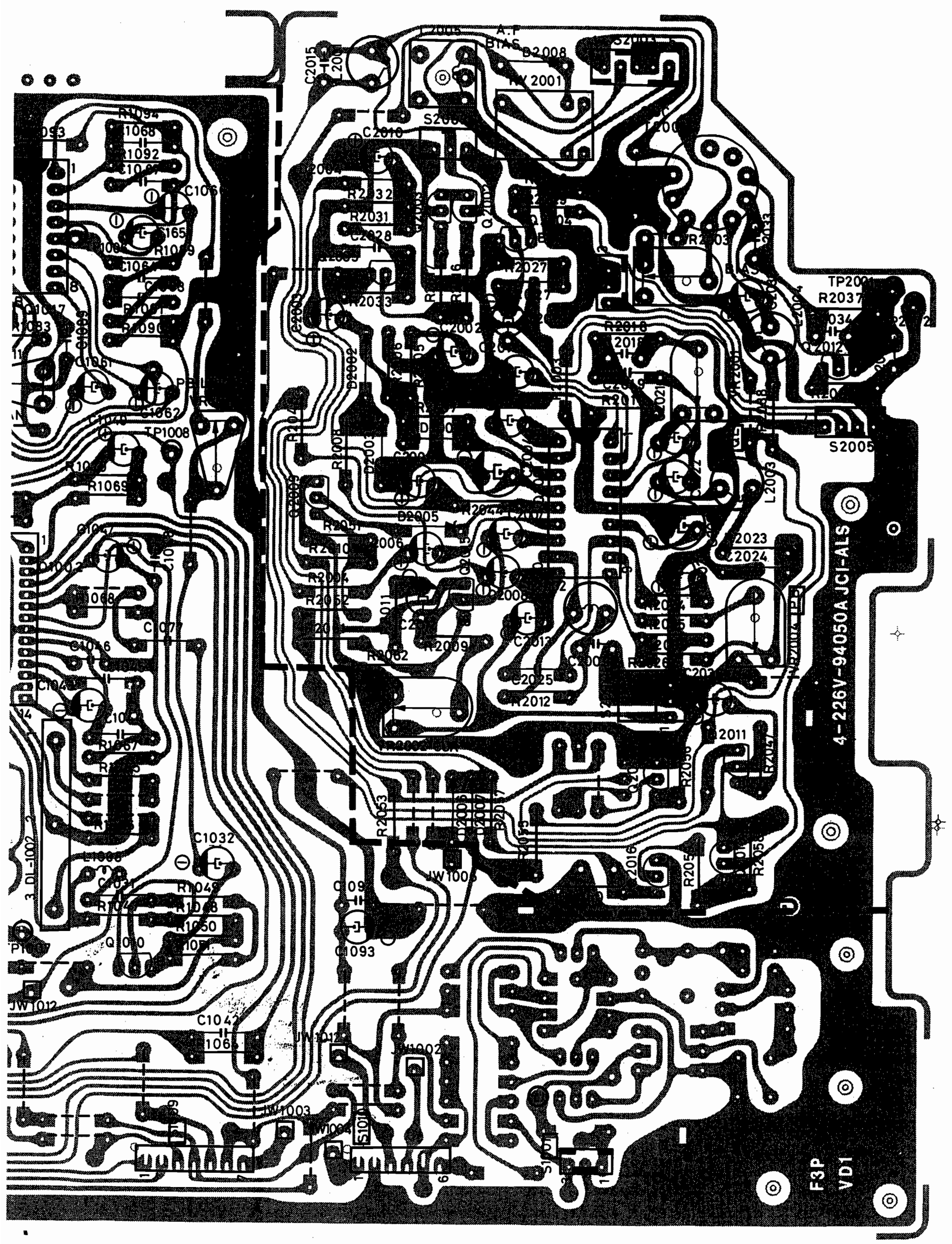
P.C.B. VD-1 VIDEO(I) CIRCUIT (CONTINENT)


Q1005 2SC930E,D
Q1001 LA7020
SYNC SEP
CLAMP
BUFF
AGC
NON-LINEAR EMPHA
FM MOD
EMPHASIS
B/W CLIP
SYNC AGC
PEAK AGC
EE LEVEL
CAR SET
EQT
TRAP
COMPRESS
RY1001
Q1004 LA7019
Q1015 2SC930E,D
Q1016 2SC930E,D
Q1017 2SA844
Q1018 2SC945
Q1019 2SC945
Q1020 2SB544E
Q1021 2SC945
Q1010 2SA844D
P.AGC
S.AGC
DEW
Q1002 LA7025
DE MODULATOR
DE-EMPHA
NON-LINE DE-EMPHA
APERT
SYNC
W CLIP
CLAMP
Y/C MIX
NOISE CANCEL
AMP
Q1009 2SA844D
Q1022 2SA608
Q1023 2SC930
Q1013 2SC1741R
Q1014 2SC945
Q1012 2SC1741R
Q1003 LA7013
DE-MODULATOR
NOI-CAN
S1007 TO PRE AMP
1 STD / SP
2 ACK OUT
3 PB C
4 GND
5 PB Y
6 GND
7 D.O.C. 1HDL
8 PB • 9V
S1006 TO PRE AMP
1 REC Y
2 REC • 9V
3 REC C
4 GND
5 RF SWP
S1011 FROM SYSCON
1 STD / SP
2 REC EE
3 REC • PAUSE
4 VIDEO MUTE
5 AUDIO DUB
6 AUDIO MUTE
S1002
1 REG • 9V
2
3 GND
S1001 TO TUNER
1 PB • 9
2
3 FTZ MUTE
S1003
1 GND
2 VIDEO OUT (RF)
3 GND
4 VIDEO OUT (LINE)
5 TEST • 9V
6 REG • 9V
7 VIDEO IN
8 GND
S1004 FROM SERVO
1 RF SWP
2 VD PULSE
3 COMP SYNC
4 GND

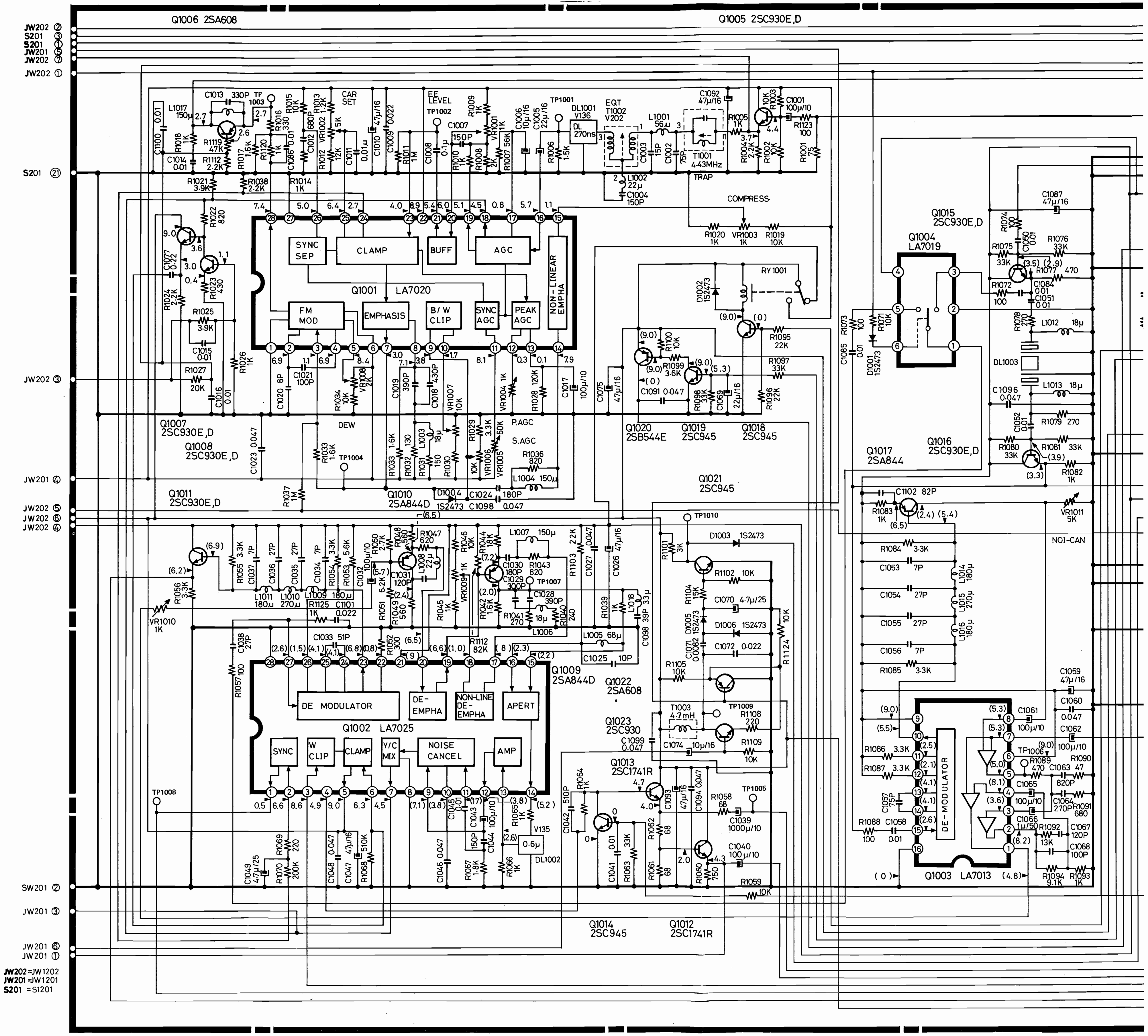
P.C.B. VD-1 VIDEO(I)/AUDIO (CONTINENT)


4-226V-94050A JCI-ALS
F3P
VD1
S2005

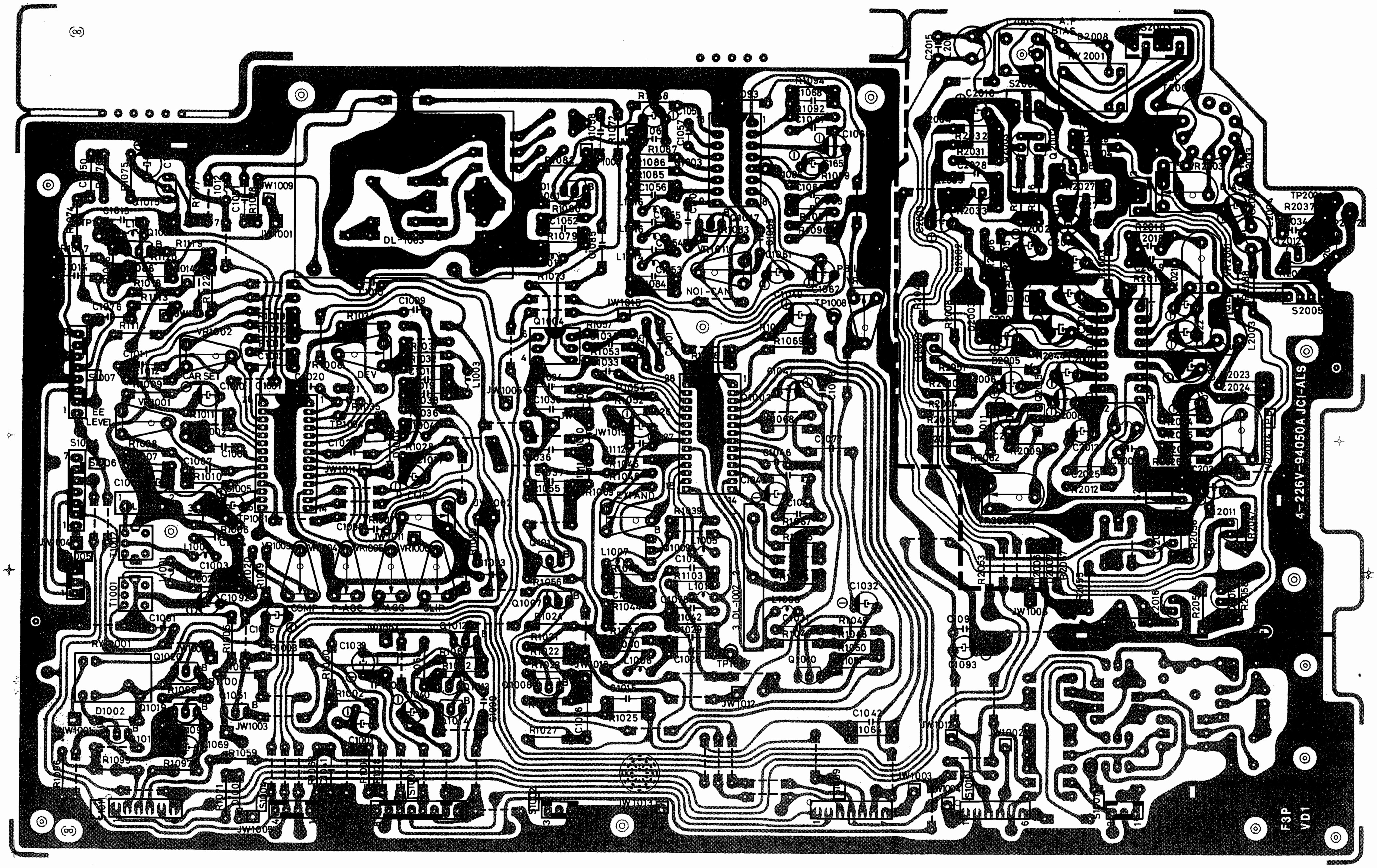
P.C.B. VD-1 VIDEO(I)/AUDIO

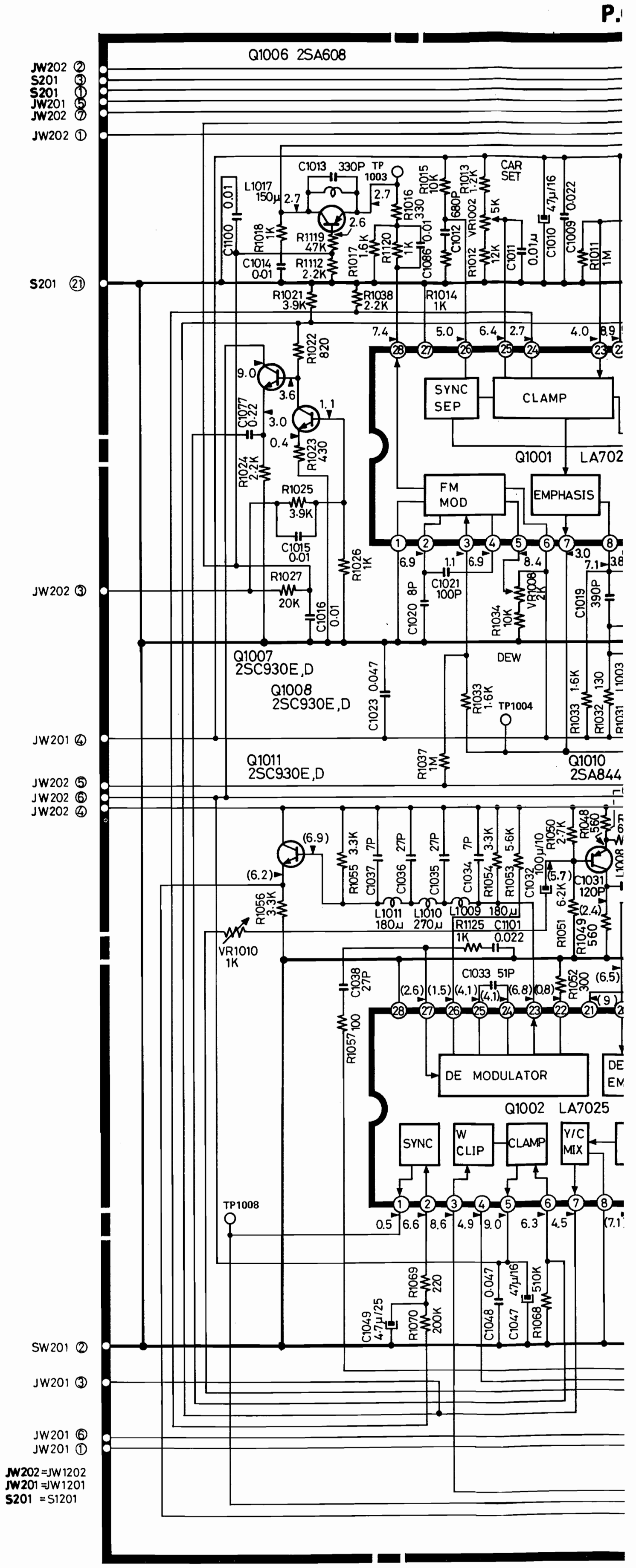

A.F BIAS
TP1008
TP2001
S2005
S2001
JW2001
JW1002
JW1003
JW1004
L1002
C1032
C1093
4-226V-94050A JCI-ALS
F3P
VD1

P.C.B. VD-1 VIDEO(I) CIRCUIT (CONTINENT)


Q1006 2SA608
Q1005 2SC930E,D
JW202 ②
S201 ③
S201 ①
JW201 ⑤
JW202 ⑦
JW202 ①
S201 ㉑
JW202 ③
JW201 ④
JW202 ⑤
JW202 ⑥
JW202 ④
SW201 ②
JW201 ③
JW201 ⑥
JW201 ①
JW202 = JW1202
JW201 = JW1201
S201 = S1201
CAR SET
EE LEVEL
TP1002
TP1001
DL1001 V136
DL 270ns
EQT T1002 V202
T1001 4.43MHz
TRAP
COMPRESS
Q1001 LA7020
SYNC SEP
CLAMP
BUFF
AGC
NON-LINEAR EMPHA
FM MOD
EMPHASIS
B/W CLIP
SYNC AGC
PEAK AGC
DEW
TP1004
P.AGC
S.AGC
Q1007 2SC930E,D
Q1008 2SC930E,D
Q1011 2SC930E,D
Q1010 2SA844D
Q1020 2SB544E
Q1019 2SC945
Q1018 2SC945
Q1021 2SC945
RY1001
D1002 1S2473
Q1004 LA7019
Q1015 2SC930E,D
Q1017 2SA844
Q1016 2SC930E,D
D1001 1S2473
DL1003
NOI-CAN
VR1011 5K
TP1010
D1003 1S2473
D1005 1S2473
D1006 1S2473
Q1002 LA7025
DE MODULATOR
DE-EMPHA
NON-LINE DE-EMPHA
APERT
SYNC
W CLIP
CLAMP
Y/C MIX
NOISE CANCEL
AMP
Q1009 2SA844D
Q1022 2SA608
Q1023 2SC930
T1003 4.7mH
TP1009
TP1007
TP1005
TP1006
TP1008
Q1013 2SC1741R
Q1014 2SC945
Q1012 2SC1741R
DL1002
V135
VR1010 1K
Q1003 LA7013
DE-MODULATOR

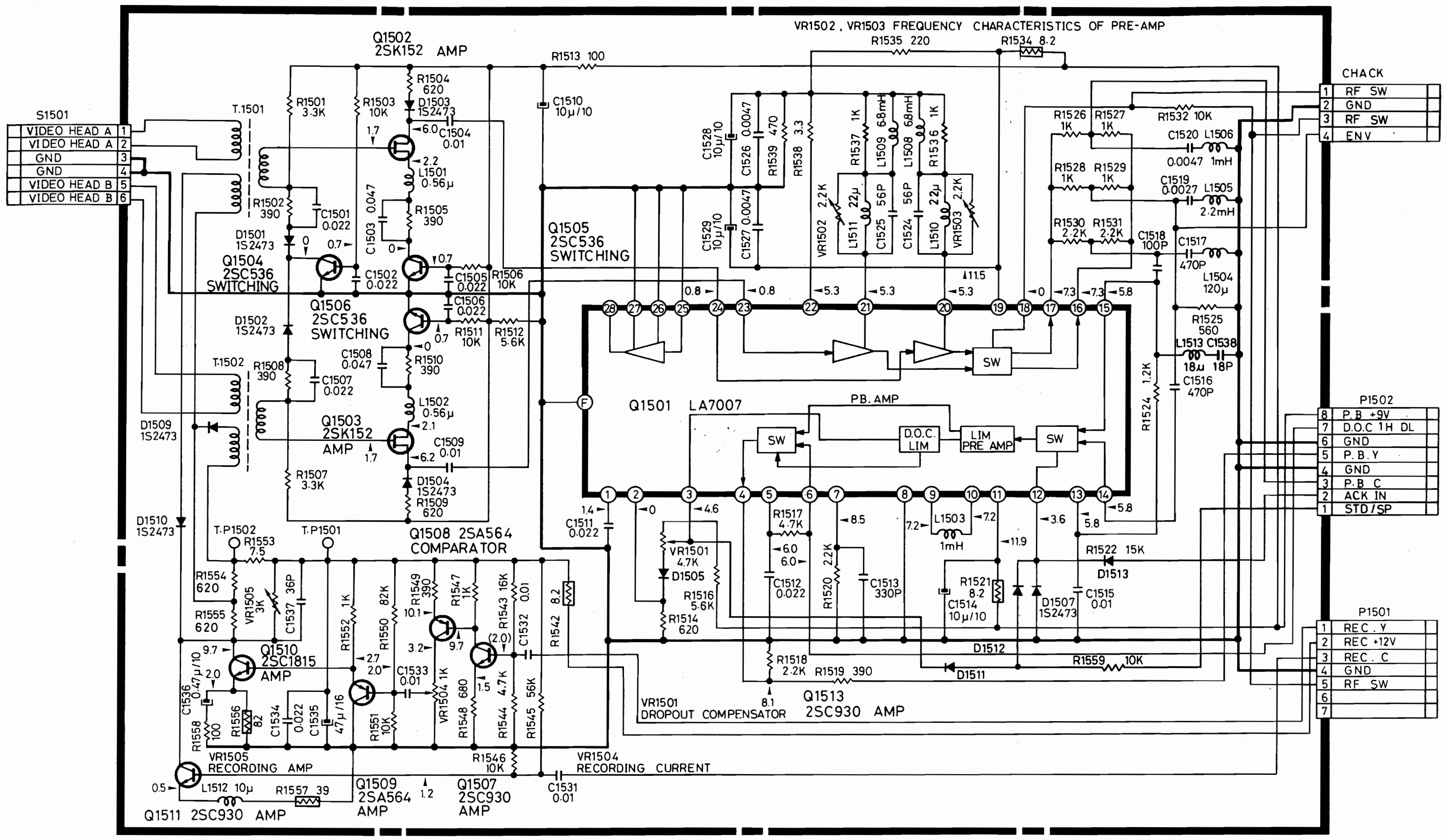
P.C.B. VD-1 VIDEO(I)/AUDIO


4-226V-94050A JCI-ALS
F3P
VD1
DL1003
NOI-CAN
DEV
CAR SET
EE LEVEL
COMP
P-AGC
CLIP
A-F BIAS
TP1008
TP2001
S2005
R2037
JW1001
JW1003
JW1009
JW1012
JW1013
D1002
RY1001
T1001
L1003
L1007
VR1001
VR1002
R1094
R1068
R1092
R1086
R1085
C1056
R1079
R1073
R2008
JW2001
R2031
R2032
R2028
R2027
R2012
R2025
R2009
R2002
C2010
R2023
R2024
R2011
C1032
C1042
C1093
R1050
R1048
R1025
R1027
R1097
R1095
R1069
R1059
R1003
C1039
R1056
C1001
R1055
R1036
R1028
R1034
R1053
R1033
R1052
R1039
R1103
C1052
R1057
R1061
R1113
R1075
R1010
R1008
R1022
R1024
R1044
C1007
C1003
C1009
C1067
R2016
C1015
C1016
C1020

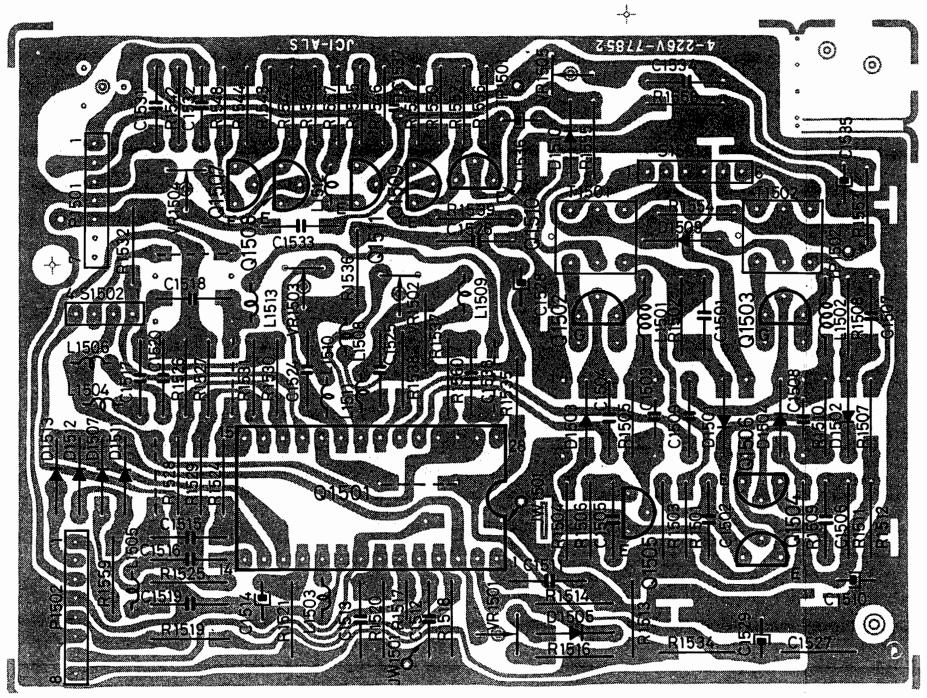

P.
Q1006 2SA608
JW202 ②
S201 ⑨
S201 ①
JW201 ⑦
JW202 ⑦
JW202 ①
S201 ㉑
JW202 ③
JW201 ④
JW202 ⑤
JW202 ⑥
JW202 ④
SW201 ②
JW201 ③
JW201 ⑥
JW201 ①
C1013 330P
TP 1003
L1017 150μ
R1119 47K
R1112 2.2K
C1014 0.01
C1100 0.01
R1018 1K
R1017 1.6K
R1120 1K
R1015 10K
R1016 330
C1006 0.01
C1012 680P
VR1002 1K
R1013 12K
R1012 12K
CAR SET
5K
C1011 0.01μ
C1010 47μ/16
C1009 0.022
R1011 1M
R1021 3.9K
R1038 2.2K
R1014 1K
R1022 820
9.0
3.6
3.0
0.4
1.1
C1077 0.22
R1023 430
R1024 2.2K
R1025 3.9K
C1015 0.01
R1026 1K
R1027 20K
C1016 0.01
7.4
5.0
6.4
2.7
4.0
8.9
SYNC SEP
CLAMP
Q1001 LA702
FM MOD
EMPHASIS
6.9
1.1
6.9
8.4
3.0
7.1
3.8
C1020 8P
C1021 100P
R1034 10K
VR1008 2K
C1019 390P
Q1007 2SC930E,D
Q1008 2SC930E,D
C1023 0.047
DEW
R1033 1.6K
TP1004
R1037 1M
R1033 1.6K
130
R1031
L1003
Q1011 2SC930E,D
Q1010 2SA844
(6.9)
(6.2)
R1055 3.3K
C1037 7P
C1036 27P
C1035 27P
C1034 7P
R1054 3.3K
R1053 5.6K
C1032 100μ/10
R1050 2.7K
JW048 560
C1031 120P
L1011 180μ
L1010 270μ
L1009 180μ
R1125 1K
C1101 0.022
R1051 6.2K
R1049 560
(5.7)
(2.4)
R1056 3.3K
VR1010 1K
C1038 27P
C1033 51P
R1052 300
(2.6)
(1.5)
(4.1)
(4.1)
(6.8)
(0.8)
(6.5)
(9)
R1057 100
DE MODULATOR
Q1002 LA7025
SYNC
W CLIP
CLAMP
Y/C MIX
TP1008
0.5
6.6
8.6
4.9
9.0
6.3
4.5
(7.1)
C1049 4.7μ/25
R1069 220
R1070 200K
C1048 0.047
C1047 47μ/16
R1068 510K

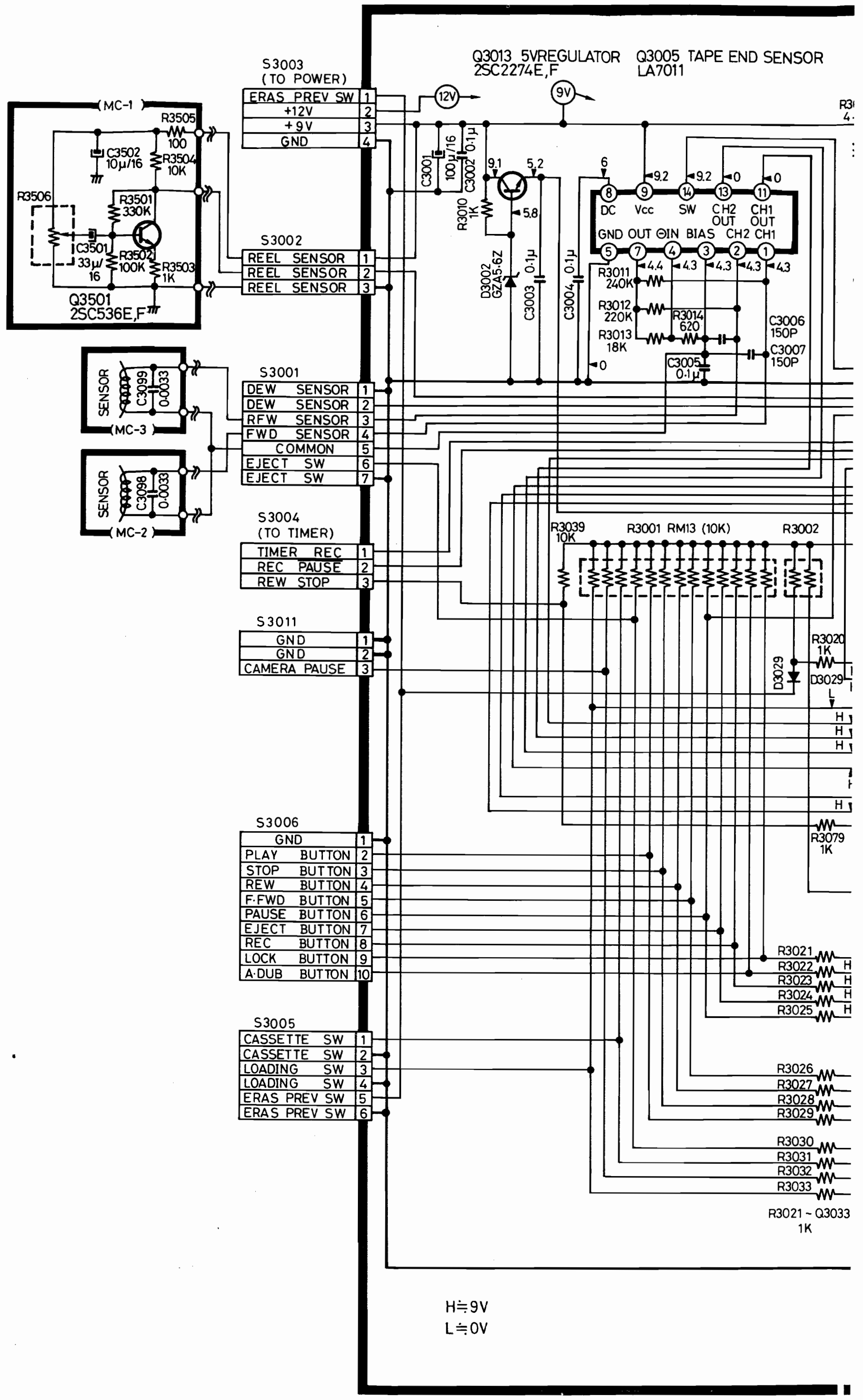
JW202=JW1202
JW201=JW1201
S201 =S1201

P.C.B. VP-1 VIDEO PRE-AMP CIRCUIT

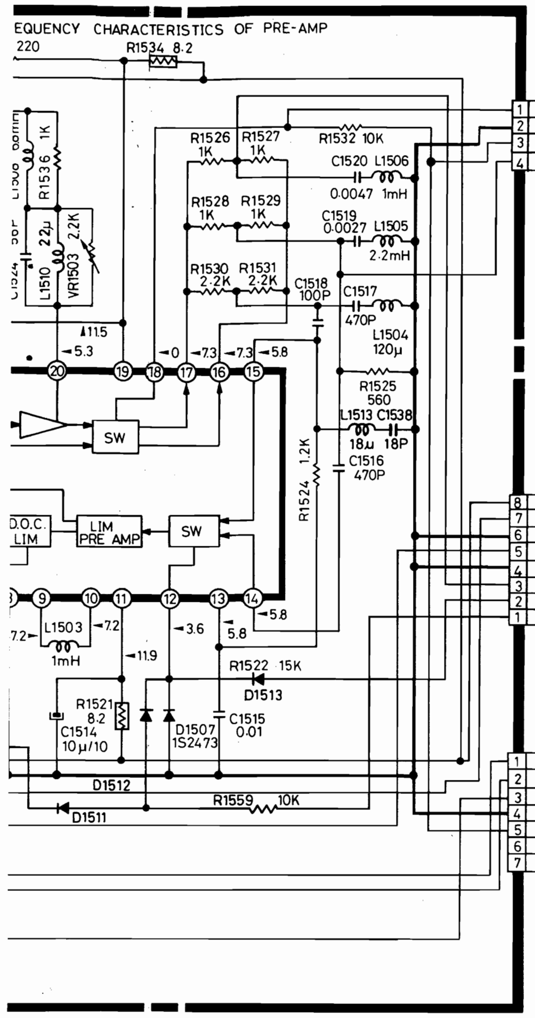

S1501
VIDEO HEAD A 1
VIDEO HEAD A 2
GND 3
GND 4
VIDEO HEAD B 5
VIDEO HEAD B 6
T.1501
T.1502
Q1502 2SK152 AMP
Q1503 2SK152 AMP
Q1504 2SC536 SWITCHING
Q1505 2SC536 SWITCHING
Q1506 2SC536 SWITCHING
Q1501 LA7007
Q1508 2SA564 COMPARATOR
Q1509 2SA564 AMP
Q1507 2SC930 AMP
Q1510 2SC1815 AMP
Q1511 2SC930 AMP
Q1513 2SC930 AMP
VR1502 , VR1503 FREQUENCY CHARACTERISTICS OF PRE-AMP
R1535 220
R1534 8.2
R1513 100
C1510 10μ/10
VR1501 DROPOUT COMPENSATOR
VR1504 RECORDING CURRENT
VR1505 RECORDING AMP
PB. AMP
D.O.C. LIM
LIM PRE AMP
SW
T.P1502
T.P1501
CHACK
1 RF SW
2 GND
3 RF SW
4 ENV
P1502
8 P.B +9V
7 D.O.C 1H DL
6 GND
5 P.B.Y
4 GND
3 P.B. C
2 ACK IN
1 STD/SP
P1501
1 REC. Y
2 REC +12V
3 REC. C
4 GND
5 RF SW
6
7

P.C.B. VP-1 VIDEO PRE-AMP


4-226V-77852
JCI-ALS
Q1501
Q1502
Q1503
Q1504
Q1505
L1513
L1504
L1506
R1516
R1534
C1527

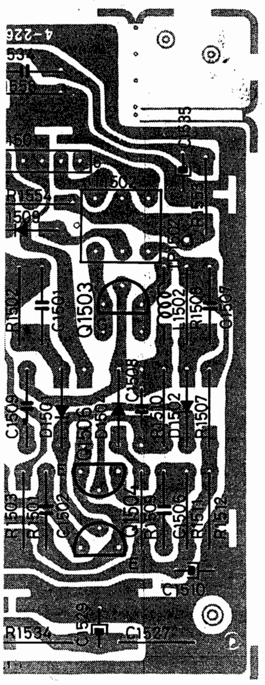

MC-1
MC-2
MC-3
SENSOR
Q3501 2SC536E,F
Q3013 5VREGULATOR 2SC2274E,F
Q3005 TAPE END SENSOR LA7011
12V
9V
S3003 (TO POWER)
ERAS PREV SW 1
+12V 2
+9V 3
GND 4
S3002
REEL SENSOR 1
REEL SENSOR 2
REEL SENSOR 3
S3001
DEW SENSOR 1
DEW SENSOR 2
RFW SENSOR 3
FWD SENSOR 4
COMMON 5
EJECT SW 6
EJECT SW 7
S3004 (TO TIMER)
TIMER REC 1
REC PAUSE 2
REW STOP 3
S3011
GND 1
GND 2
CAMERA PAUSE 3
S3006
GND 1
PLAY BUTTON 2
STOP BUTTON 3
REW BUTTON 4
F.FWD BUTTON 5
PAUSE BUTTON 6
EJECT BUTTON 7
REC BUTTON 8
LOCK BUTTON 9
A.DUB BUTTON 10
S3005
CASSETTE SW 1
CASSETTE SW 2
LOADING SW 3
LOADING SW 4
ERAS PREV SW 5
ERAS PREV SW 6
R3001 RM13 (10K)
R3021 ~ Q3033 1K
H≒9V
L≒0V

UIT



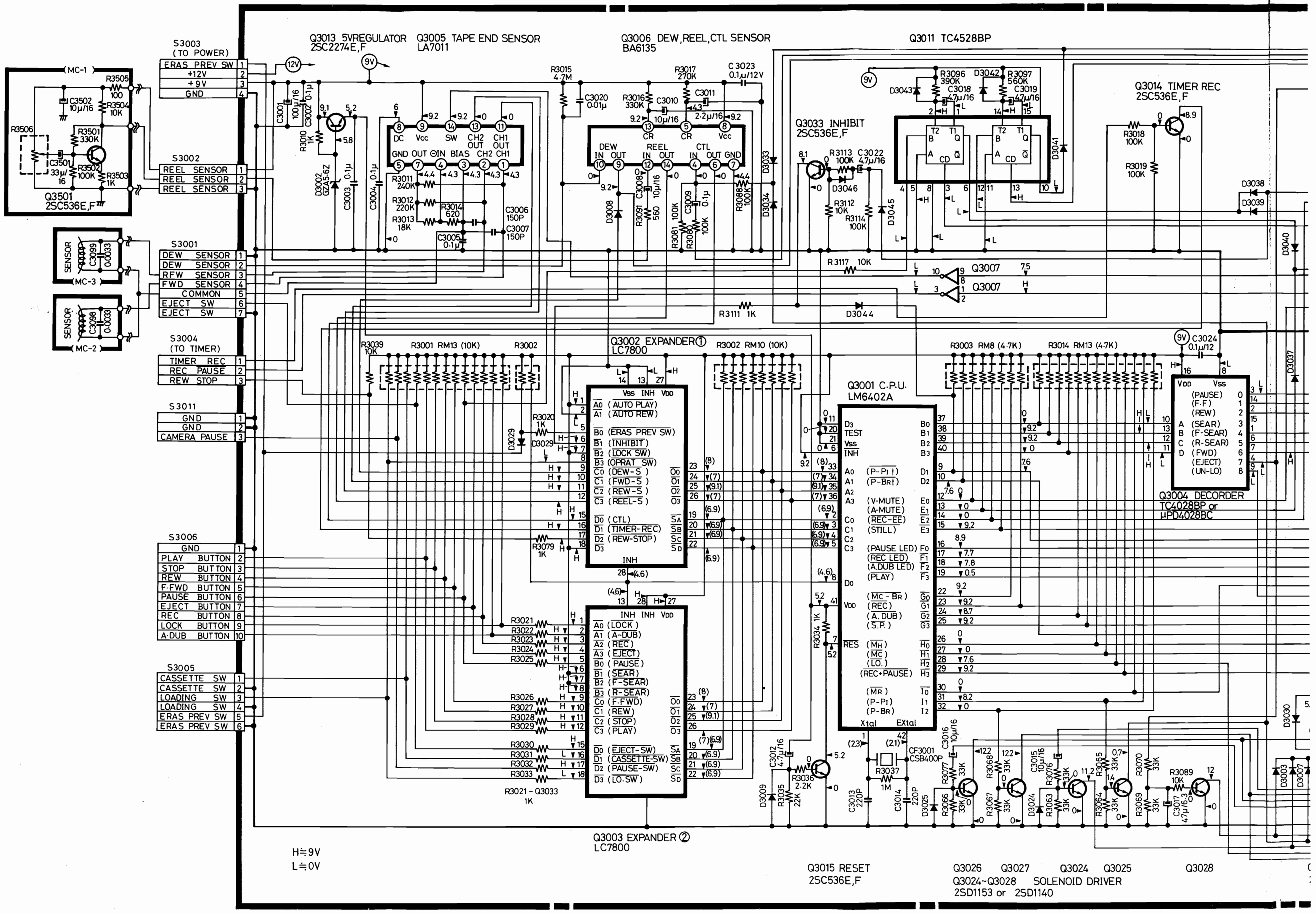
EQUENCY CHARACTERISTICS OF PRE-AMP
220
R1534 8.2
CHACK
RF SW
GND
RF SW
ENV
R1526 1K
R1527 1K
R1532 10K
C1520 L1506 0.0047 1mH
R1528 1K
R1529 1K
C1519 0.0027
L1505 2.2mH
R1530 2.2K
R1531 2.2K
C1518 100P
C1517 470P
L1504 120μ
R1525 560
L1513 C1538 18μ 18P
C1516 470P
R1524 1.2K
VR1503 2.2K
L1510
SW
D.O.C. LIM
LIM PRE AMP
P1502
P.B +9V
D.O.C 1H DL
GND
P.B.Y
GND
P.B.C
ACK IN
STD/SP
L1503 1mH
R1522 15K
D1513
R1521 8.2
C1514 10μ/10
D1507 1S2473
C1515 0.01
D1512
D1511
R1559 10K
P1501
REC.Y
REC +12V
REC.C
GND
RF SW

P



Q1503
R1534
C1527

P.C.B. VD-2 SYSTEM CONTROL

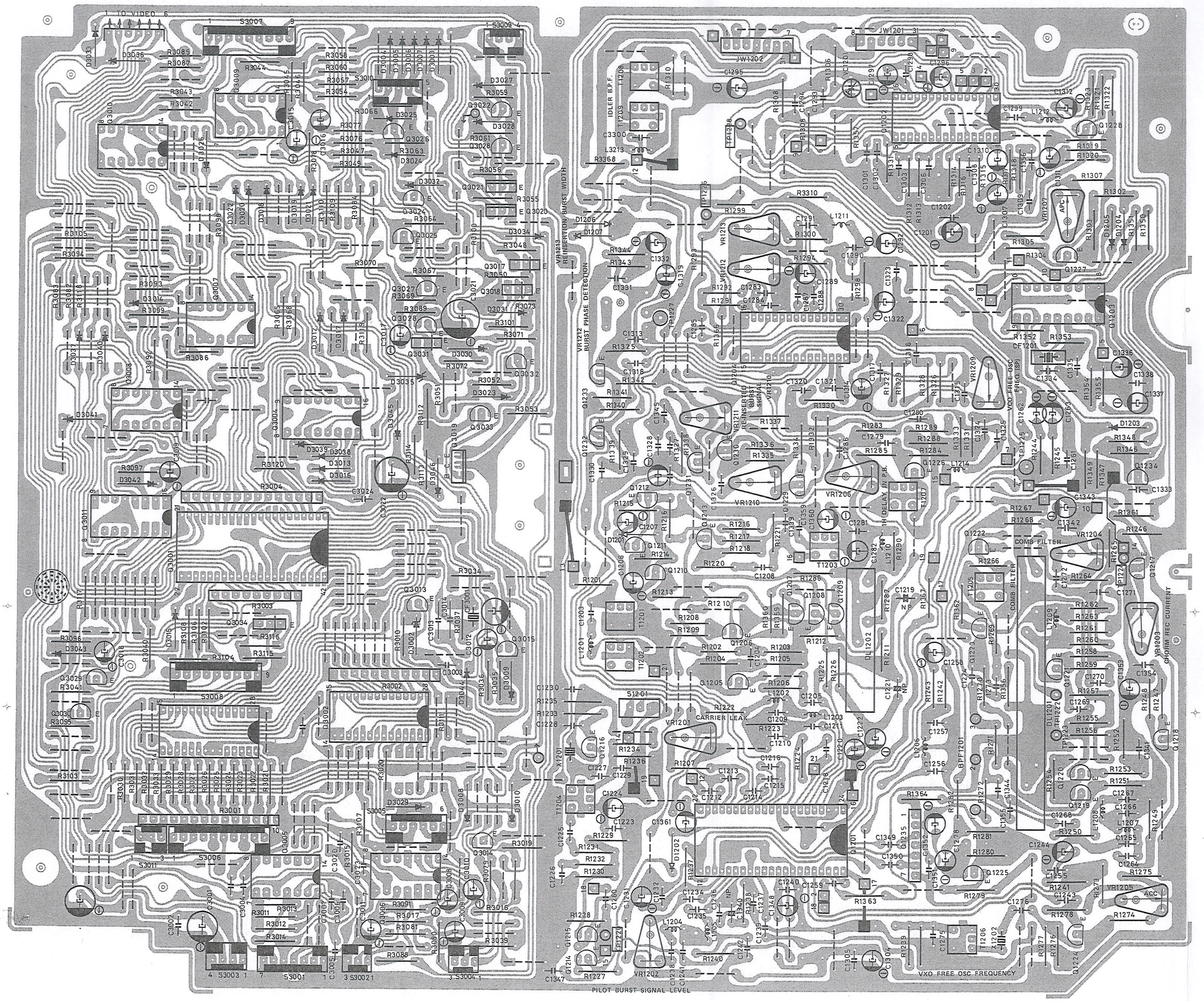


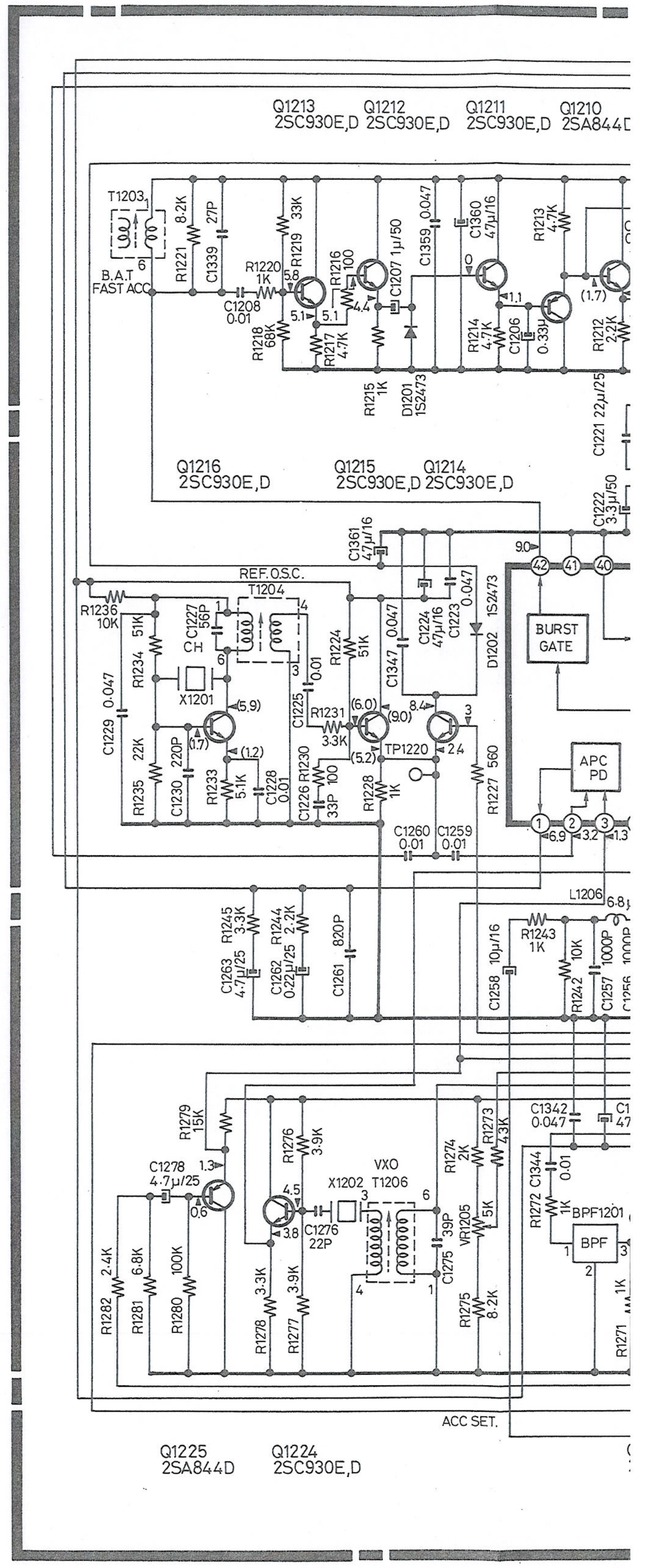
S3003 (TO POWER)
ERAS PREV SW
+12V
+9V
GND
MC-1
R3505 100
C3502 10μ/16
R3504 10K
R3501 330K
R3506
C3501 33μ/16
R3502 100K
R3503 1K
Q3501 2SC536E,F
S3002
REEL SENSOR
REEL SENSOR
REEL SENSOR
SENSOR
MC-3
MC-2
C3099
C3098
S3001
DEW SENSOR
DEW SENSOR
RFW SENSOR
FWD SENSOR
COMMON
EJECT SW
EJECT SW
S3004 (TO TIMER)
TIMER REC
REC PAUSE
REW STOP
S3011
GND
GND
CAMERA PAUSE
S3006
GND
PLAY BUTTON
STOP BUTTON
REW BUTTON
F.FWD BUTTON
PAUSE BUTTON
EJECT BUTTON
REC BUTTON
LOCK BUTTON
A.DUB BUTTON
S3005
CASSETTE SW
CASSETTE SW
LOADING SW
LOADING SW
ERAS PREV SW
ERAS PREV SW
Q3013 5VREGULATOR 2SC2274E,F
Q3005 TAPE END SENSOR LA7011
Q3006 DEW,REEL,CTL SENSOR BA6135
Q3011 TC4528BP
Q3014 TIMER REC 2SC536E,F
Q3033 INHIBIT 2SC536E,F
D3002 GZA5.6Z
R3015 4.7M
C3020 0.01μ
R3016 330K
C3010 10μ/16
R3017 270K
C3011 2.2μ/16
C3023 0.1μ/12V
R3011 240K
R3012 220K
R3013 18K
R3014 620
C3005 0.1μ
C3006 150P
C3007 150P
R3096 390K
D3042
R3097 560K
C3018 47μ/16
C3019 47μ/16
D3043
D3041
R3113 100K
C3022 4.7μ/16
D3046
R3112 10K
R3114 100K
D3045
R3018 100K
R3019 100K
D3038
D3039
R3117 10K
Q3007
Q3007
R3111 1K
D3044
Q3002 EXPANDER① LC7800
(AUTO PLAY)
(AUTO REW)
(ERAS PREV SW)
(INHIBIT)
(LOCK SW)
(OPRAT SW)
(DEW-S)
(FWD-S)
(REW-S)
(REEL-S)
(CTL)
(TIMER-REC)
(REW-STOP)
R3039 10K
R3001 RM13 (10K)
R3002
R3002 RM10 (10K)
R3003 RM8 (4.7K)
R3014 RM13 (4.7K)
Q3001 C.P.U. LM6402A
TEST
INH
(P-P1)
(P-BR)
(V-MUTE)
(A-MUTE)
(REC-EE)
(STILL)
(PAUSE LED)
(REC LED)
(A.DUB LED)
(PLAY)
(MC-BR)
(REC)
(A.DUB)
(S.P.)
(MH)
(MC)
(LO.)
(REC•PAUSE)
(MR)
(P-P1)
(P-BR)
Xtal
EXtal
RES
C3024 0.1μ/12
Q3004 DECORDER TC4028BP or μPD4028BC
(PAUSE)
(F.F)
(REW)
(SEAR)
(F-SEAR)
(R-SEAR)
(FWD)
(EJECT)
(UN-LO)
Q3003 EXPANDER② LC7800
(LOCK)
(A-DUB)
(REC)
(EJECT)
(PAUSE)
(SEAR)
(F-SEAR)
(R-SEAR)
(F-FWD)
(REW)
(STOP)
(PLAY)
(EJECT-SW)
(CASSETTE-SW)
(PAUSE-SW)
(LO-SW)
R3021~R3033 1K
R3020 1K
R3079 1K
D3029
R3034 1K
R3036 2.2K
R3035 22K
D3009
C3012 4.7μ/16
C3013 220P
R3037 1M
CF3001 CSB400P
C3014 220P
C3016 10μ/16
R3077 33K
R3066 33K
R3068 33K
R3067 33K
C3015 10μ/16
R3076 33K
R3063 33K
R3065 33K
R3064 33K
R3070 33K
R3069 33K
R3089 10K
C3017 47μ/16
D3030
D3003
H≒9V
L≒0V
Q3015 RESET 2SC536E,F
Q3026
Q3027
Q3024
Q3025
Q3028
Q3024~Q3028 SOLENOID DRIVER 2SD1153 or 2SD1140

SYS-CON

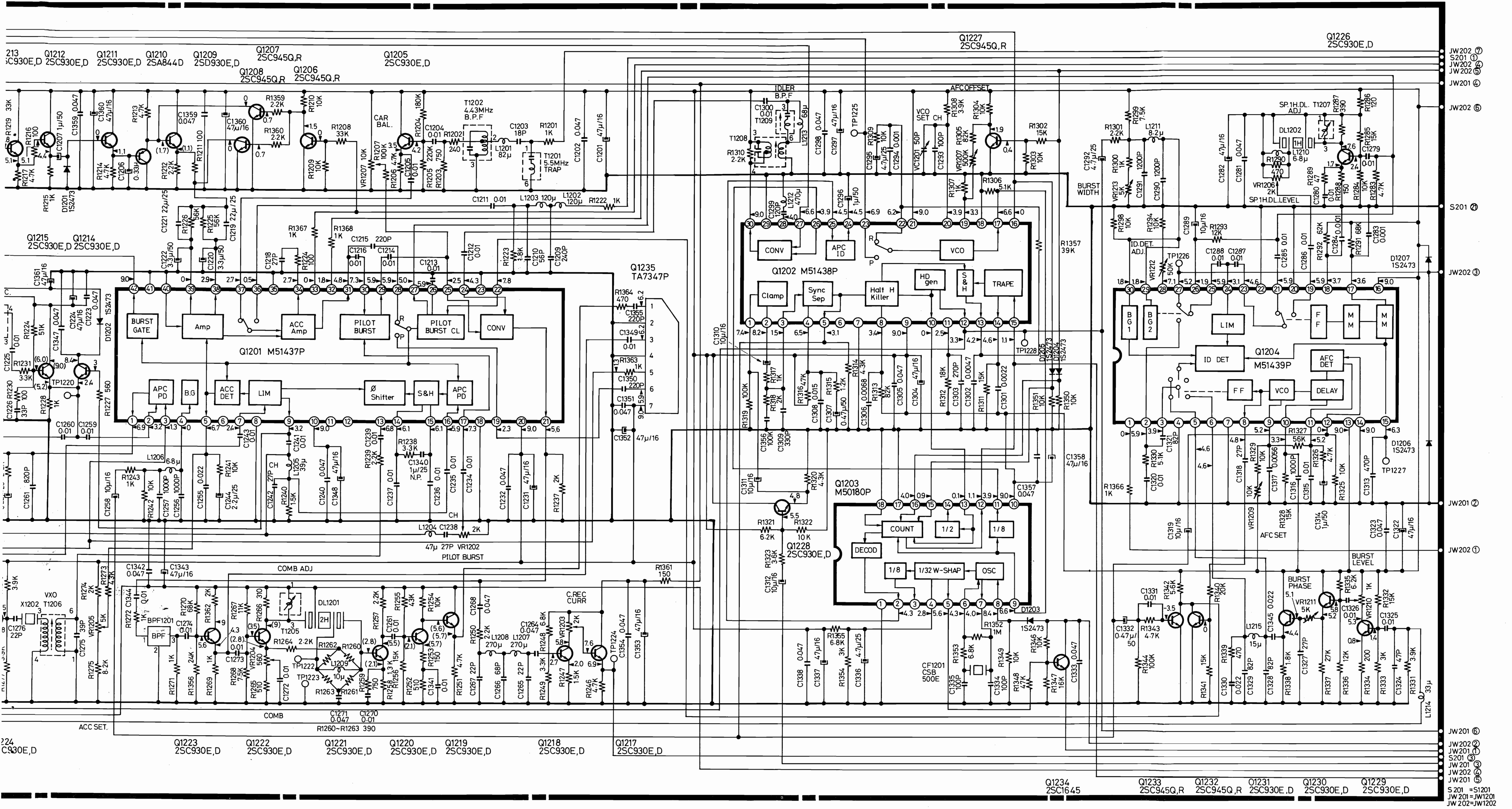
P.C.B. VD-2 VIDEO(II)/SYSTEM CONTROL

VIDEO(II)


TO VIDEO
S3007
S3009
JW1201
JW1202
IDLER B.P.F.
REINSERTION BURST WIDTH
BURST PHASE DETECTION
REINSERTED BURST SIGNAL
VCO FREE OSC FREQ (SP)
APC
DELAY IN P.B.
COMB FILTER
CHROM REC CURRENT
CARRIER LEAK
PILOT BURST SIGNAL LEVEL
VXO FREE OSC FREQUENCY
ACC
S3008
S3001
S3002
S3003
S3004
S3005
S3006
S3011
VR1201
VR1202
VR1203
VR1204
VR1205
VR1206
VR1207
VR1209
VR1210
VR1211
VR1212
VR1213
VR1243
IC1201
DL1201
DL1202
BPF1201
T1201
T1202
T1203
T1204
T1205
T1206
T1207
T1208
T1209

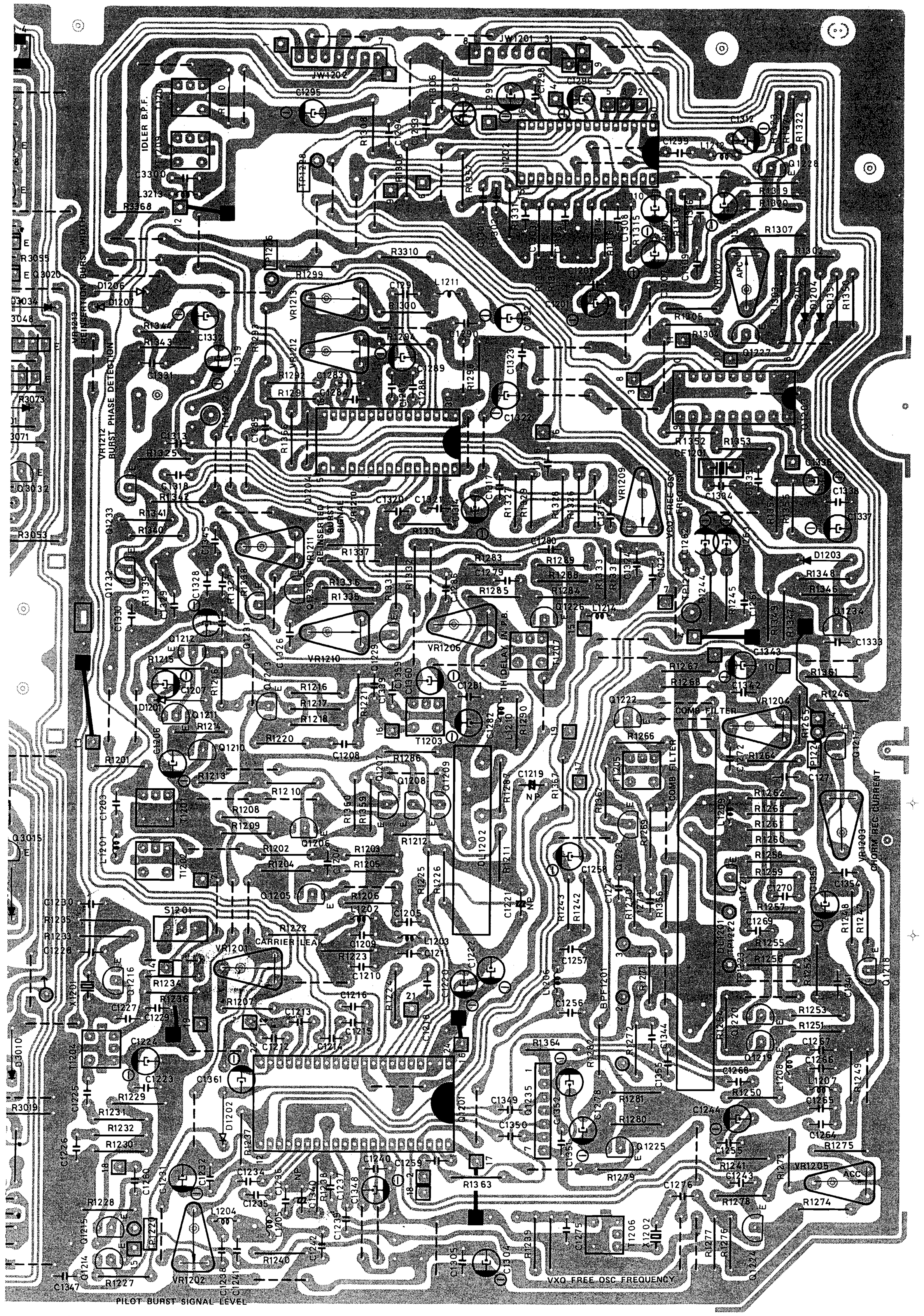

Q1213 2SC930E,D
Q1212 2SC930E,D
Q1211 2SC930E,D
Q1210 2SA844D
T1203
B.A.T FAST ACC
R1221 8.2K
C1339 27P
R1219 33K
R1220 1K
C1208 0.01
R1218 68K
R1217 4.7K
R1216 100
C1207 1μ/50
C1359 0.047
C1360 47μ/16
R1213 4.7K
R1215 1K
D1201 1S2473
R1214 4.7K
C1206 0.33μ
R1212 2.2K
C1221 22μ/25
Q1216 2SC930E,D
Q1215 2SC930E,D
Q1214 2SC930E,D
C1222 3.3μ/50
C1361 47μ/16
REF.O.S.C.
T1204
R1236 10K
R1234 51K
C1227 56P
CH
X1201
C1229 0.047
R1235 22K
C1230 220P
R1233 5.1K
C1228 0.01
C1225 0.01
R1231 3.3K
R1230 100
C1226 33P
R1224 51K
C1347 0.047
C1224 47μ/16
C1223 0.047
D1202 1S2473
BURST GATE
APC PD
TP1220
R1228 1K
R1227 560
C1260 0.01
C1259 0.01
R1245 3.3K
R1244 2.2K
C1263 4.7μ/25
C1262 0.22μ/25
C1261 820P
L1206
R1243 1K
C1258 10μ/16
R1242 10K
C1257 1000P
R1279 15K
C1278 4.7μ/25
R1276 3.9K
VXO
X1202
T1206
C1276 22P
C1275 39P
R1274 2K
R1273 4.3K
VR1205 5K
R1275 8.2K
C1342 0.047
R1272 1K
C1344 0.01
BPF1201
BPF
R1282 2.4K
R1281 6.8K
R1280 100K
R1278 3.3K
R1277 3.9K
R1271
ACC SET.
Q1225 2SA844D
Q1224 2SC930E,D

P.C.B. VD-2 VIDEO(II) CIRCUIT

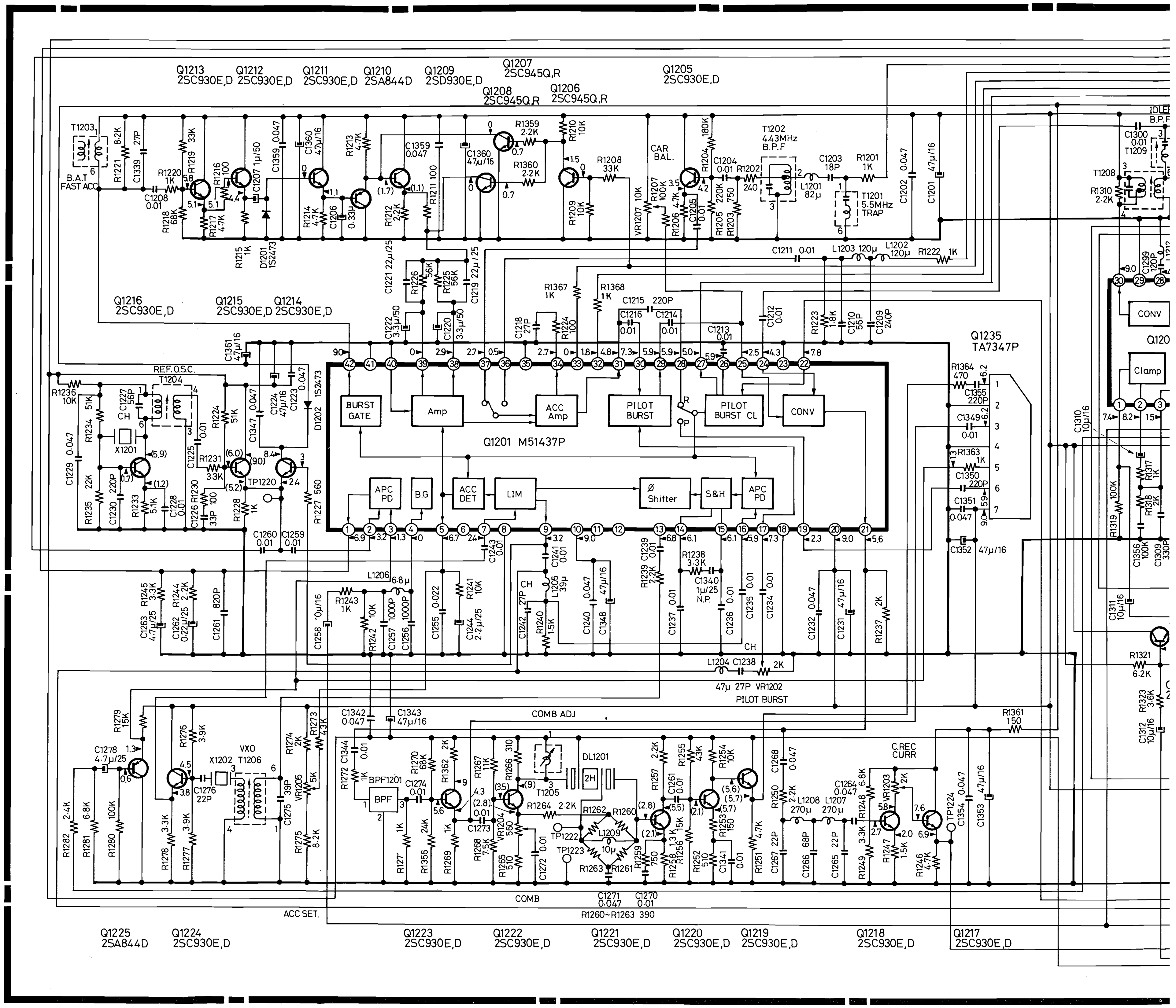

Q1212 2SC930E,D
Q1211 2SC930E,D
Q1210 2SA844D
Q1209 2SD930E,D
Q1207 2SC945Q,R
Q1208 2SC945Q,R
Q1206 2SC945Q,R
Q1205 2SC930E,D
Q1227 2SC945Q,R
Q1226 2SC930E,D
Q1215 2SC930E,D
Q1214 2SC930E,D
Q1235 TA7347P
Q1201 M51437P
Q1202 M51438P
Q1203 M50180P
Q1204 M51439P
Q1228 2SC930E,D
Q1223 2SC930E,D
Q1222 2SC930E,D
Q1221 2SC930E,D
Q1220 2SC930E,D
Q1219 2SC930E,D
Q1218 2SC930E,D
Q1217 2SC930E,D
Q1234 2SC1645
Q1233 2SC945Q,R
Q1232 2SC945Q,R
Q1231 2SC930E,D
Q1230 2SC930E,D
Q1229 2SC930E,D
T1202 4.43MHz B.P.F
T1201 5.5MHz TRAP
CAR BAL.
IDLER B.P.F
AFC OFFSET
VCO SET CH
BURST WIDTH
SP.1H.DL. ADJ
SP.1H.DL.LEVEL
ID.DET. ADJ.
BURST GATE
Amp
ACC Amp
PILOT BURST
PILOT BURST CL
CONV
APC PD
B.G
ACC DET
LIM
Ø Shifter
S&H
APC ID
VCO
Clamp
Sync Sep
Half H Killer
HD gen
S&H
TRAPE
COUNT
1/2
1/8
DECOD
1/32 W-SHAP
OSC
B G 1
B G 2
ID DET
AFC DET
F F
M M
FF
DELAY
VXO
X1202
T1206
BPF1201
BPF
COMB ADJ
COMB
ACC SET.
DL1201
T1205
C.REC CURR
PILOT BURST
AFC SET
BURST PHASE
BURST LEVEL
CF1201 CSB 500E
DL1202
T1207
TP1220
TP1222
TP1223
TP1224
TP1225
TP1226
TP1227
TP1228
JW202 ⑦
S201 ①
JW202 ④
JW202 ⑤
JW201 ④
JW202 ⑥
S201 ㉑
JW202 ③
JW201 ②
JW202 ①
JW201 ⑥
JW202 ②
JW201 ①
S201 ③
JW201 ③
JW202 ④
JW201 ⑤
S201 =S1201
JW201=JW1201
JW202=JW1202
E

3. VD-2 VIDEO(II)/SYSTEM CONTROL

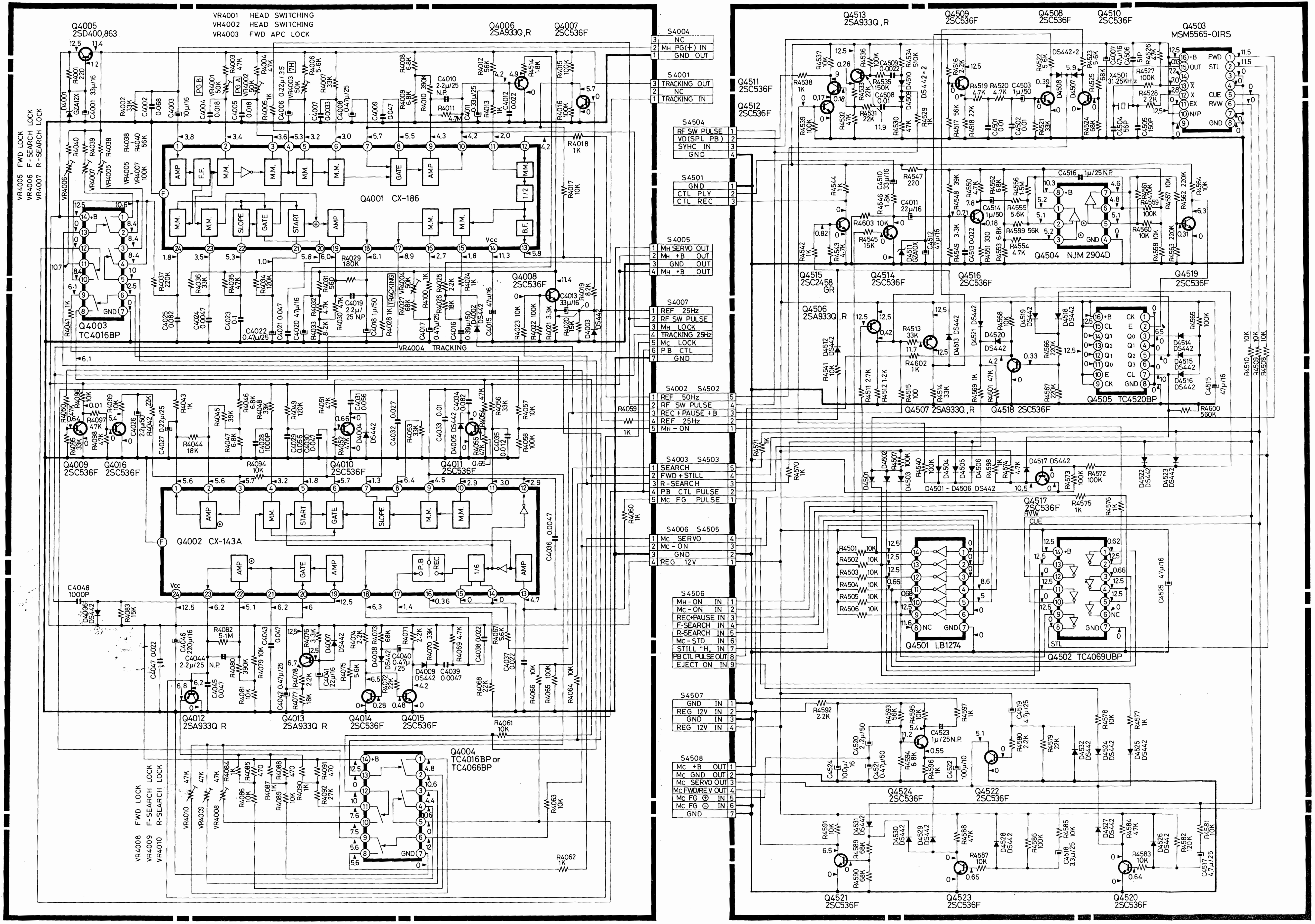
VIDEO(II)

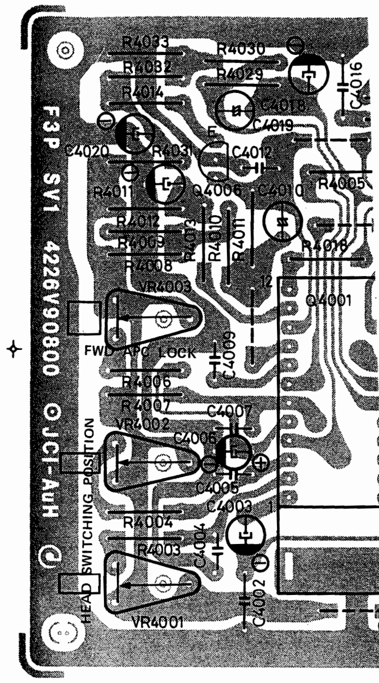

IDLER B.P.F.
BURST PHASE DETECTION
PILOT BURST SIGNAL LEVEL
VXO FREE OSC FREQUENCY
CARRIER LEAK
COMB FILTER
ACC
APC
C.REC CURRENT
JW1201
JW1206
S1201
VR1202
VR1205
VR1206
VR1210
VR1211
VR1212
IC1201
IC1202
DL1201

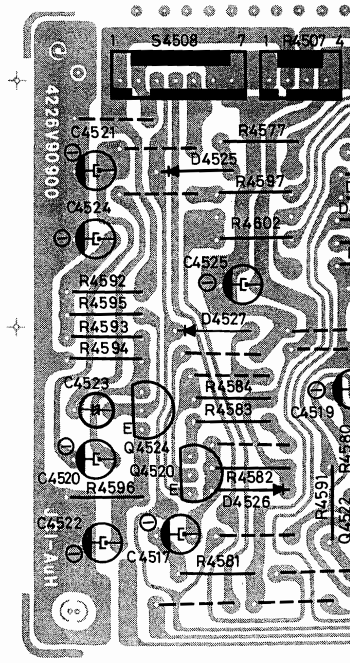
P.C.B. VD-2 VIDEO(II) CIRCUIT


Q1213 2SC930E,D
Q1212 2SC930E,D
Q1211 2SC930E,D
Q1210 2SA844D
Q1209 2SD930E,D
Q1208 2SC945Q,R
Q1207 2SC945Q,R
Q1206 2SC945Q,R
Q1205 2SC930E,D
Q1216 2SC930E,D
Q1215 2SC930E,D
Q1214 2SC930E,D
Q1235 TA7347P
Q1201 M51437P
T1203
B.A.T FAST ACC
CAR BAL.
T1202 4.43MHz B.P.F
T1201 5.5MHz TRAP
REF.OSC.
T1204
X1201
TP1220
BURST GATE
Amp
ACC Amp
PILOT BURST
PILOT BURST CL
CONV
APC PD
B.G
ACC DET
LIM
Ø Shifter
S&H
Clamp
IDLER B.P.F
T1208
T1209
L1204 C1238 47μ 27P VR1202 2K
PILOT BURST
COMB ADJ
VXO
X1202 T1206
BPF1201
BPF
T1205
DL1201
TP1222
TP1223
C.REC CURR
TP1224
ACC SET.
COMB
R1260~R1263 390
Q1225 2SA844D
Q1224 2SC930E,D
Q1223 2SC930E,D
Q1222 2SC930E,D
Q1221 2SC930E,D
Q1220 2SC930E,D
Q1219 2SC930E,D
Q1218 2SC930E,D
Q1217 2SC930E,D

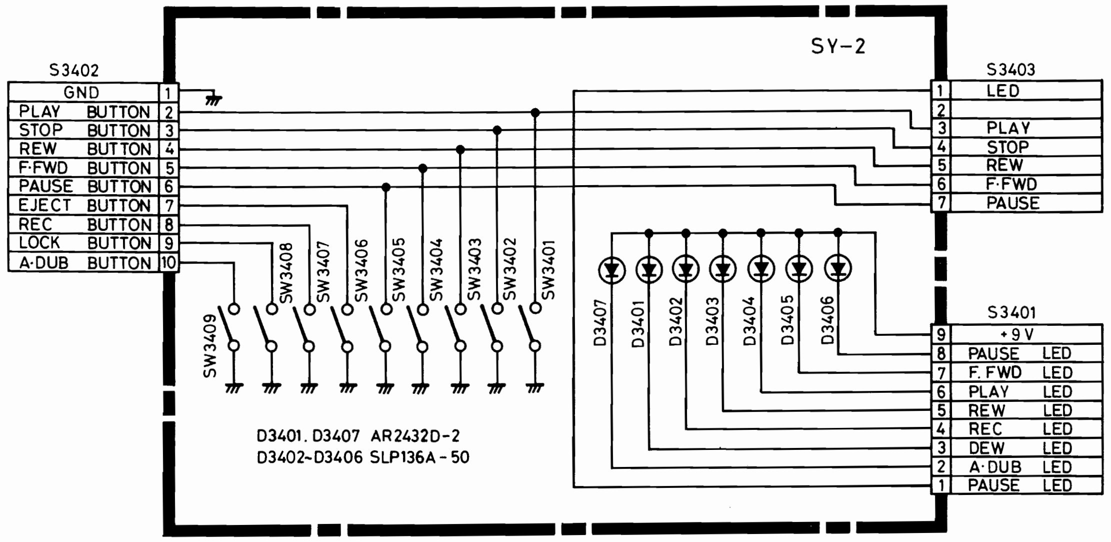
P.C.B. SV-1.4 SERVO(I)(II) CIRCUIT


VR4001 HEAD SWITCHING
VR4002 HEAD SWITCHING
VR4003 FWD APC LOCK
VR4005 FWD LOCK
VR4006 F-SEARCH LOCK
VR4007 R-SEARCH LOCK
VR4008 FWD LOCK
VR4009 F-SEARCH LOCK
VR4010 R-SEARCH LOCK
Q4005 2SD400,863
Q4006 2SA933Q,R
Q4007 2SC536F
Q4001 CX-186
Q4003 TC4016BP
Q4008 2SC536F
Q4009 2SC536F
Q4016 2SC536F
Q4010 2SC536F
Q4011 2SC536F
Q4002 CX-143A
Q4012 2SA933Q R
Q4013 2SA933Q R
Q4014 2SC536F
Q4015 2SC536F
Q4004 TC4016BP or TC4066BP
VR4004 TRACKING
S4004 NC / MH PG(+) IN / GND OUT
S4001 TRACKING OUT / NC / TRACKING IN
S4504 RF SW PULSE / VD(SPL PB) / SYHC IN / GND
S4501 GND / CTL PLY / CTL REC
S4005 MH SERVO OUT / MH +B OUT / GND OUT / MH +B OUT
S4007 REF 25Hz / RF SW PULSE / MH LOCK / TRACKING 25Hz / Mc LOCK / PB CTL / GND
S4002 S4502 REF 50Hz / RF SW PULSE / REC+PAUSE+B / REF 25Hz / MH-ON
S4003 S4503 SEARCH / FWD+STILL / R-SEARCH / PB CTL PULSE / Mc FG PULSE
S4006 S4505 Mc SERVO / Mc-ON / GND / REG 12V
S4506 MH-ON IN / Mc-ON IN / REC+PAUSE IN / F-SEARCH IN / R-SEARCH IN / Mc-STD IN / STILL "H" IN / PB CTL PULSE OUT / EJECT ON IN
S4507 GND IN / REG 12V IN / GND IN / REG 12V IN
S4508 Mc +B OUT / Mc GND OUT / Mc SERVO OUT / Mc FWD/REV OUT / Mc FG ⊕ IN / Mc FG ⊖ IN / GND
Q4513 2SA933Q,R
Q4509 2SC536F
Q4508 2SC536F
Q4510 2SC536F
Q4503 MSM5565-OIRS
Q4511 2SC536F
Q4512 2SC536F
Q4504 NJM 2904D
Q4515 2SC2458 GR
Q4514 2SC536F
Q4516 2SC536F
Q4519 2SC536F
Q4506 2SA933Q,R
Q4505 TC4520BP
Q4507 2SA933Q,R
Q4518 2SC536F
Q4517 2SC536F
Q4501 LB1274
Q4502 TC4069UBP
Q4524 2SC536F
Q4522 2SC536F
Q4521 2SC536F
Q4523 2SC536F
Q4520 2SC536F
D4501~D4506 DS442
X4501 31.25KHz

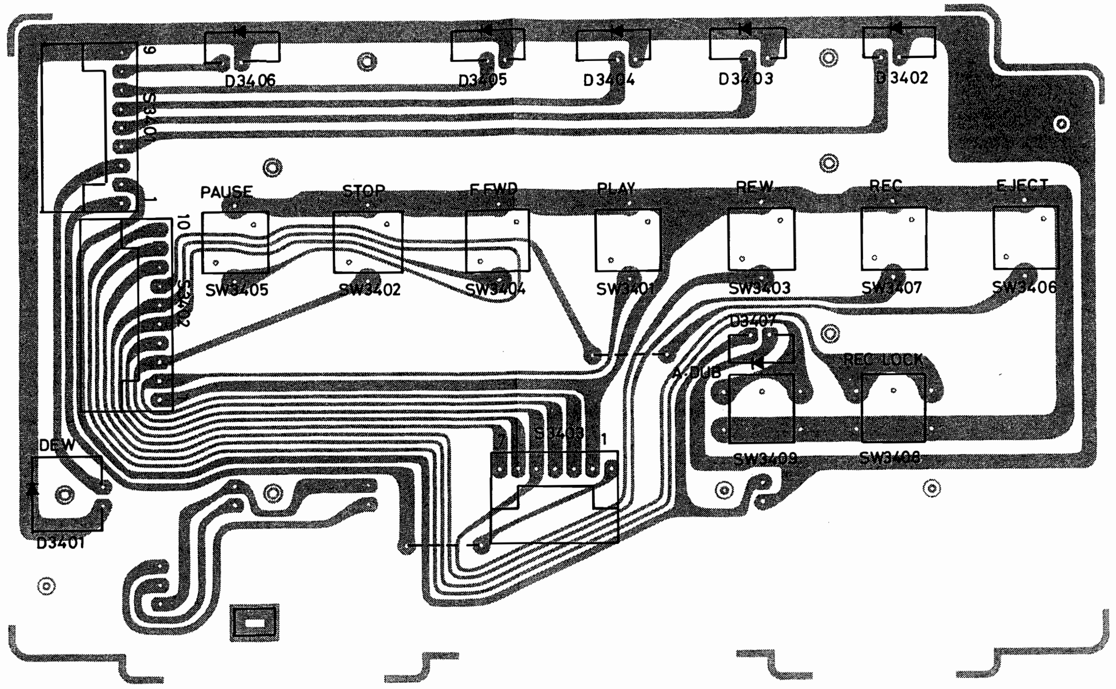

F3P SV1 4226V9080D OJCI-AuH
HEAD SWITCHING POSITION
FWD APC LOCK
VR4001
VR4002
Q4001


S4508
4226V9080D
C4521
C4524
C4525
C4523
C4520
C4522
C4517
C4519
Q4524
Q4520

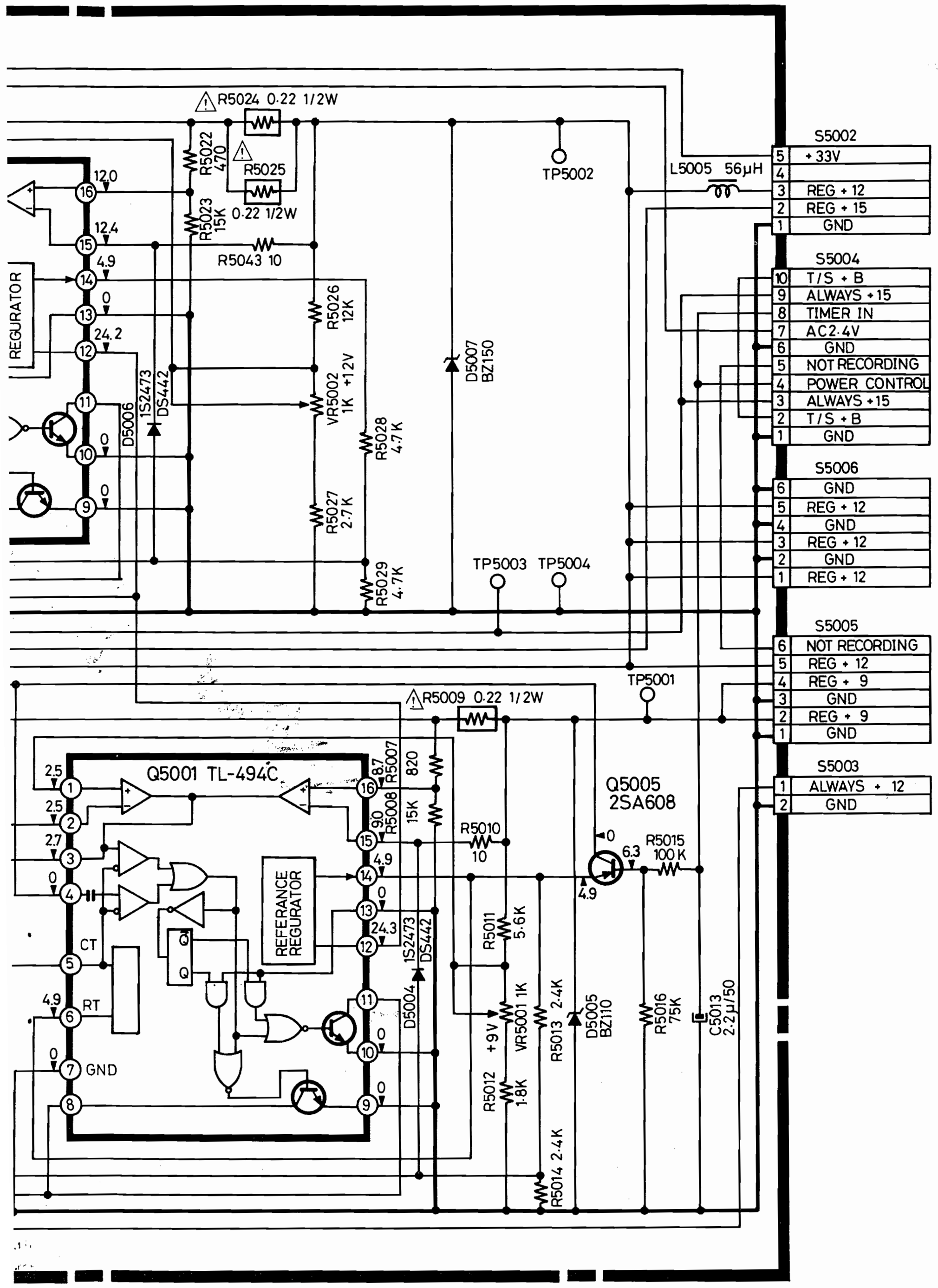
P.C.B. SY-2 OPERATION SWITCH CIRCUIT (South Africa)


SY-2
S3402
1 GND
2 PLAY BUTTON
3 STOP BUTTON
4 REW BUTTON
5 F·FWD BUTTON
6 PAUSE BUTTON
7 EJECT BUTTON
8 REC BUTTON
9 LOCK BUTTON
10 A·DUB BUTTON
S3403
1 LED
2
3 PLAY
4 STOP
5 REW
6 F·FWD
7 PAUSE
S3401
9 +9V
8 PAUSE LED
7 F.FWD LED
6 PLAY LED
5 REW LED
4 REC LED
3 DEW LED
2 A·DUB LED
1 PAUSE LED
SW3409
SW3408
SW3407
SW3406
SW3405
SW3404
SW3403
SW3402
SW3401
D3407
D3401
D3402
D3403
D3404
D3405
D3406
D3401. D3407 AR2432D-2
D3402~D3406 SLP136A-50

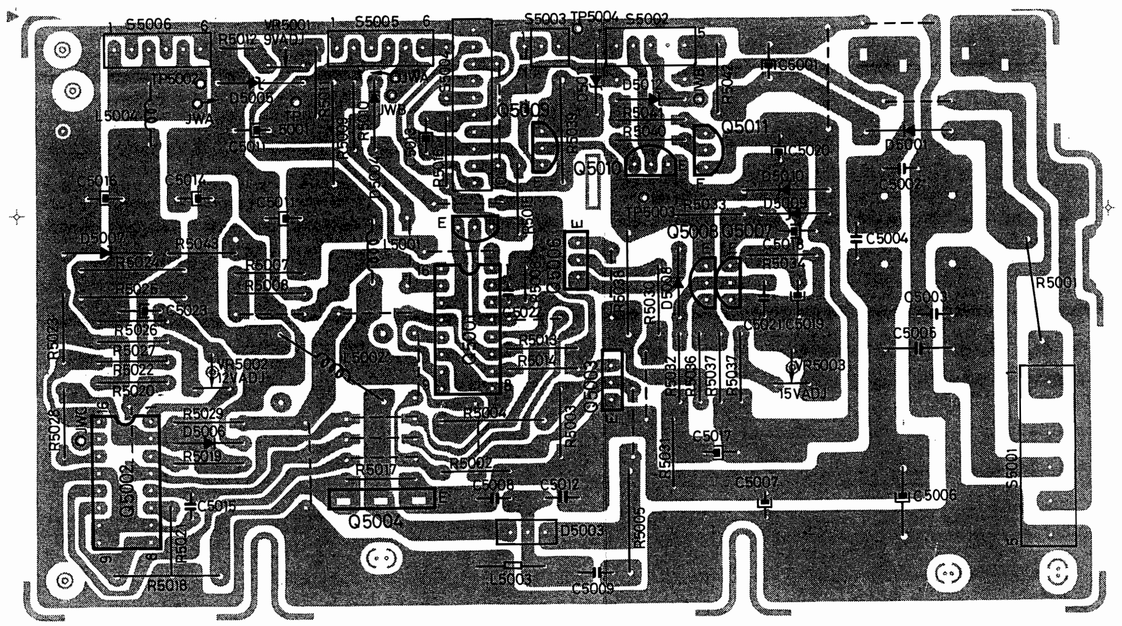
P.C.B. SY-2 OPERATION SWITCH


D3406
D3405
D3404
D3403
D3402
PAUSE
STOP
F.FWD
PLAY
REW
REC
EJECT
SW3405
SW3402
SW3404
SW3401
SW3403
SW3407
SW3406
D3407
A·DUB
REC LOCK
DEW
SW3409
SW3408
D3401
S3403
S3402
S3401

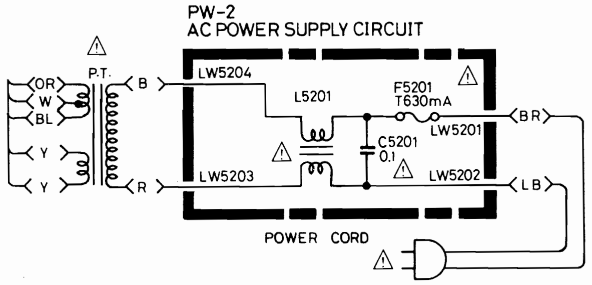
R SUPPLY CIRCUIT


R5024 0.22 1/2W
R5022 470
R5025 0.22 1/2W
R5023 15K
R5043 10
REGURATOR
R5026 12K
VR5002 1K +12V
R5028 4.7K
R5027 2.7K
R5029 4.7K
D5007 BZ150
D5006 1S2473
DS442
TP5002
TP5003
TP5004
TP5001
L5005 56μH
S5002
5 +33V
4
3 REG +12
2 REG +15
1 GND
S5004
10 T/S +B
9 ALWAYS +15
8 TIMER IN
7 AC2.4V
6 GND
5 NOT RECORDING
4 POWER CONTROL
3 ALWAYS +15
2 T/S +B
1 GND
S5006
6 GND
5 REG +12
4 GND
3 REG +12
2 GND
1 REG +12
S5005
6 NOT RECORDING
5 REG +12
4 REG +9
3 GND
2 REG +9
1 GND
S5003
1 ALWAYS +12
2 GND
R5009 0.22 1/2W
Q5001 TL-494C
REFERANCE REGURATOR
CT
RT
GND
R5007 820
R5008 15K
R5010 10
Q5005 2SA608
R5015 100K
R5011 5.6K
VR5001 1K +9V
R5013 2.4K
D5005 BZ110
R5016 75K
C5013 2.2μ/50
R5012 1.8K
R5014 2.4K
D5004 1S2473
DS442
120
12.4
4.9
0
24.2
2.5
2.7
6.3
8.7
9.0

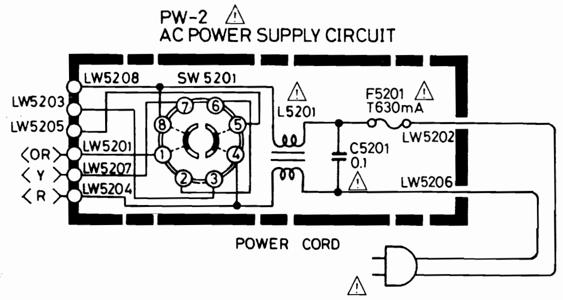
P.C.B. PW-1 DC POWER SUPPLY


S5006
S5005
S5003
TP5004
S5002
VR5001
VR5002
Q5001
Q5002
Q5004
Q5005
Q5011
R5001
C5004
C5005
C5006
C5007
C5009
C5014
D5003
D5005
L5004
R5018

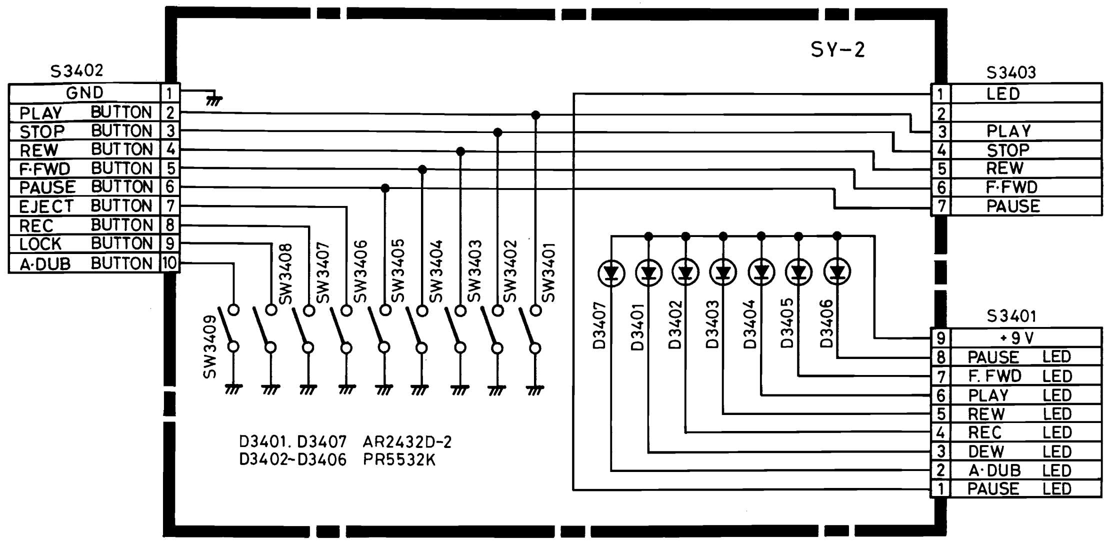
P.C.B. PW-2 AC SUPPLY CIRCUIT


PW-2
AC POWER SUPPLY CIRCUIT
P.T.
OR
W
BL
Y
Y
B
R
LW5204
L5201
F5201 T630mA
LW5201
C5201 0.1
LW5203
LW5202
BR
LB
POWER CORD

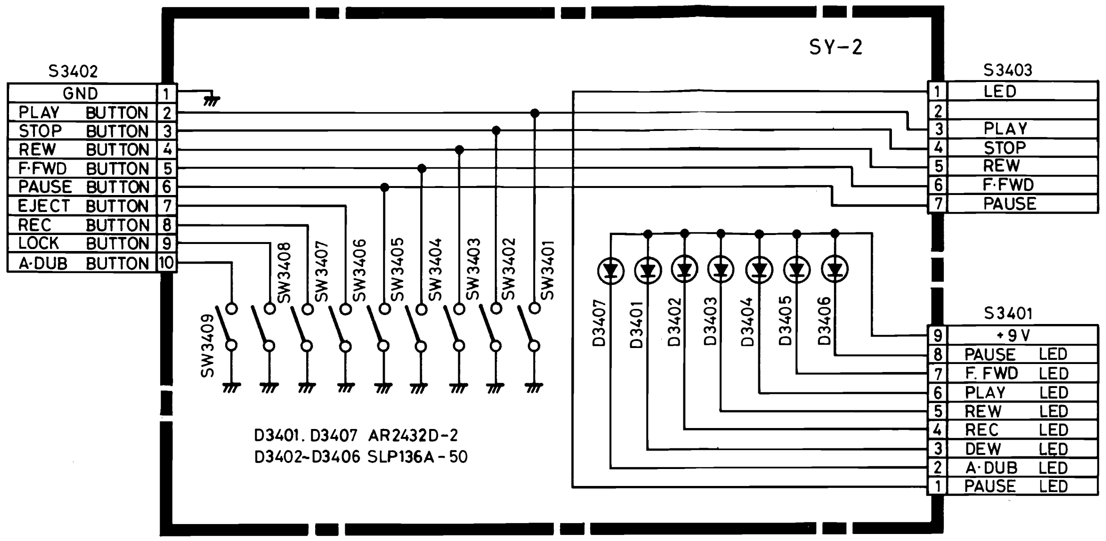
P.C.B. PW-2 AC SUPPLY CIRCUIT
(South Africa, Indonesia)


PW-2
AC POWER SUPPLY CIRCUIT
LW5208
SW 5201
LW5203
LW5205
OR
Y
R
LW5201
LW5207
LW5204
L5201
F5201 T630mA
LW5202
C5201 0.1
LW5206
POWER CORD

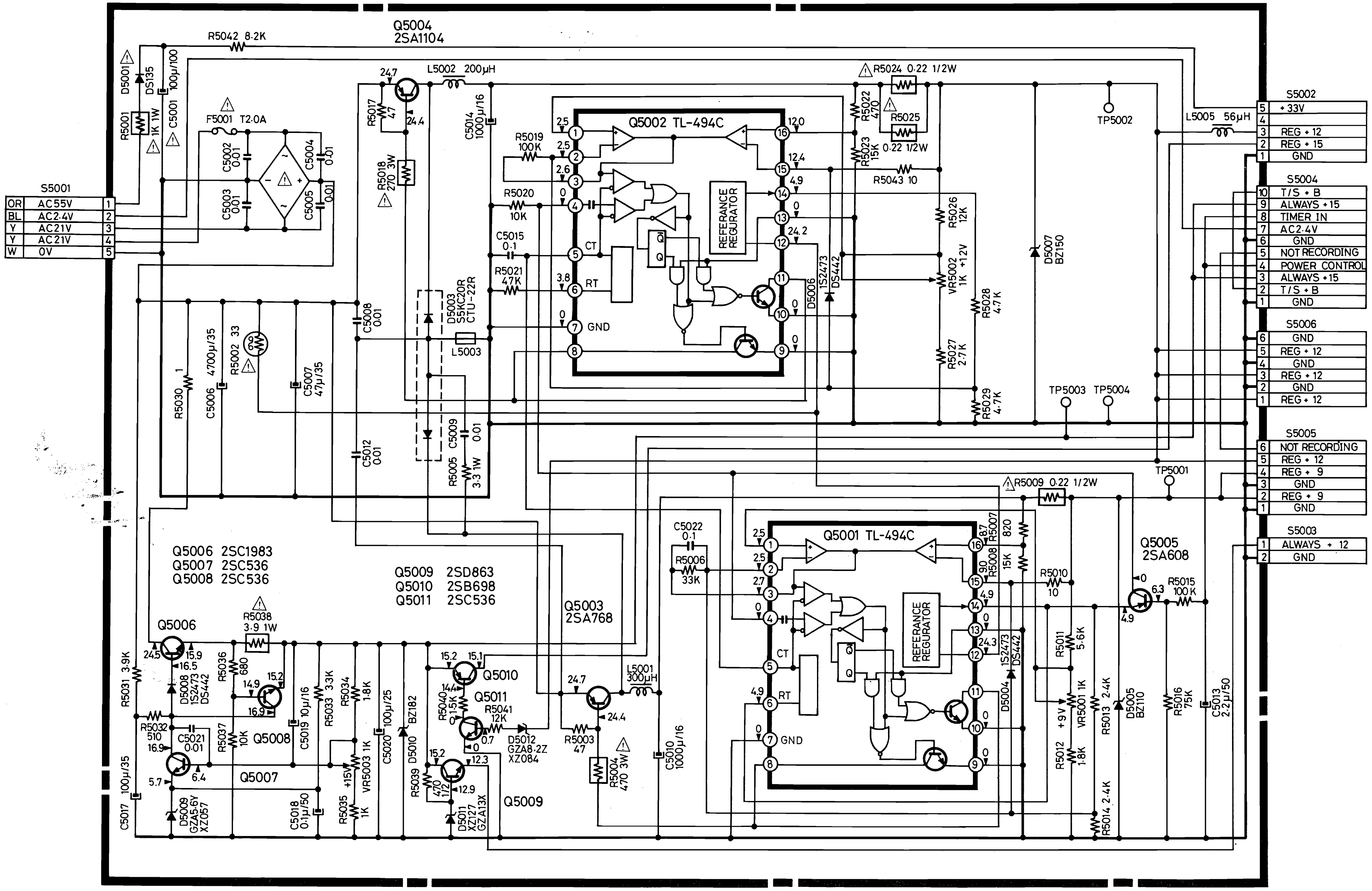
P.C.B. SY-2 OPERATION SWITCH CIRCUIT


SY-2
S3402
1 GND
2 PLAY BUTTON
3 STOP BUTTON
4 REW BUTTON
5 F·FWD BUTTON
6 PAUSE BUTTON
7 EJECT BUTTON
8 REC BUTTON
9 LOCK BUTTON
10 A·DUB BUTTON
SW3409 SW3408 SW3407 SW3406 SW3405 SW3404 SW3403 SW3402 SW3401
D3407 D3401 D3402 D3403 D3404 D3405 D3406
S3403
1 LED
2
3 PLAY
4 STOP
5 REW
6 F·FWD
7 PAUSE
S3401
9 +9V
8 PAUSE LED
7 F.FWD LED
6 PLAY LED
5 REW LED
4 REC LED
3 DEW LED
2 A·DUB LED
1 PAUSE LED
D3401. D3407 AR2432D-2
D3402~D3406 PR5532K

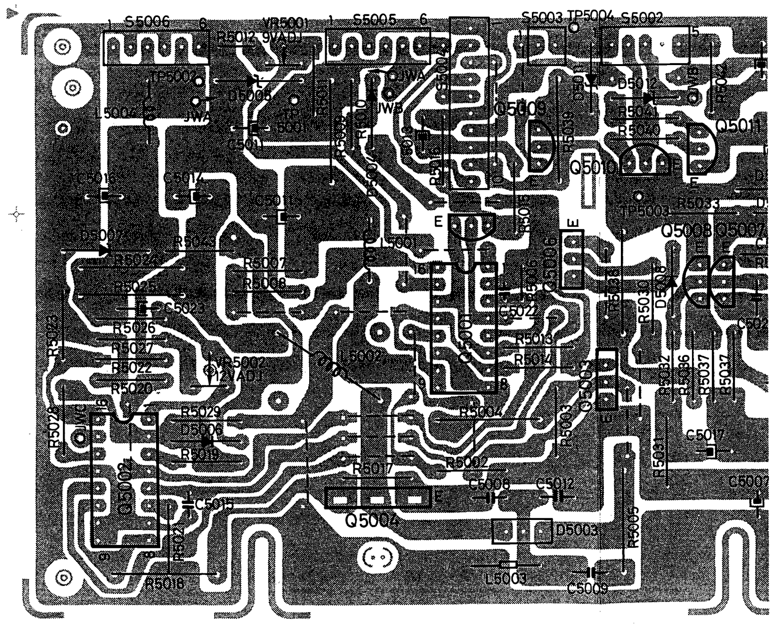
P.C.B. SY-2 OPERATION SWITCH CIRCUIT (South Africa)


SY-2
S3402
1 GND
2 PLAY BUTTON
3 STOP BUTTON
4 REW BUTTON
5 F·FWD BUTTON
6 PAUSE BUTTON
7 EJECT BUTTON
8 REC BUTTON
9 LOCK BUTTON
10 A·DUB BUTTON
SW3409 SW3408 SW3407 SW3406 SW3405 SW3404 SW3403 SW3402 SW3401
D3407 D3401 D3402 D3403 D3404 D3405 D3406
S3403
1 LED
2
3 PLAY
4 STOP
5 REW
6 F·FWD
7 PAUSE
S3401
9 +9V
8 PAUSE LED
7 F. FWD LED
6 PLAY LED
5 REW LED
4 REC LED
3 DEW LED
2 A·DUB LED
1 PAUSE LED
D3401. D3407 AR2432D-2
D3402~D3406 SLP136A-50

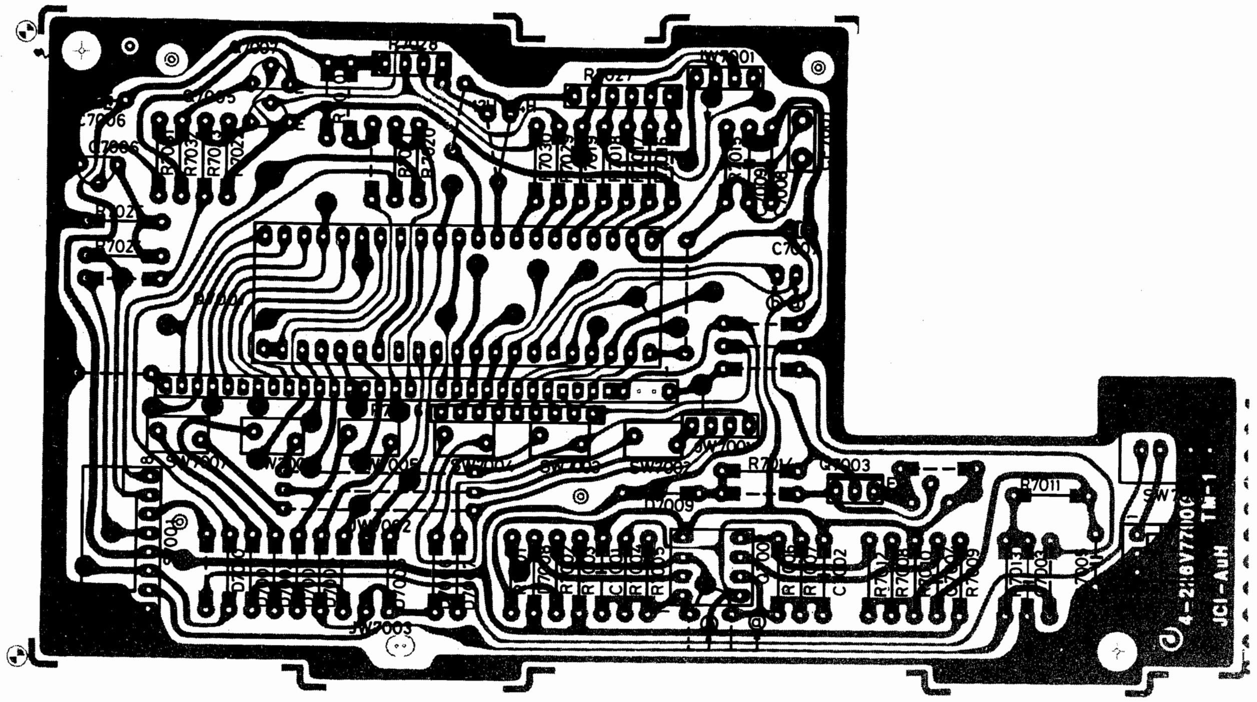
P.C.B. PW-1 DC POWER SUPPLY CIRCUIT


R5042 8.2K
Q5004 2SA1104
L5002 200μH
R5024 0.22 1/2W
R5025 0.22 1/2W
R5022 470
R5023 15K
R5043 10
TP5002
L5005 56μH
Q5002 TL-494C
REFERANCE REGURATOR
D5001 D5135
R5001 1K 1W
C5001 100μ/100
F5001 T2.0A
C5002 0.01
C5003 0.01
C5004 0.01
C5005 0.01
R5017 47
R5018 270 3W
C5014 1000μ/16
R5019 100K
R5020 10K
C5015 0.1
R5021 47K
D5003 S5KC20R CTU-22R
L5003
C5008 0.01
C5012 0.01
C5009 0.01
R5005 3.3 1W
R5030 1
C5006 4700μ/35
R5002 33
C5007 47μ/35
D5006 1S2473 DS442
R5026 12K
VR5002 1K +12V
R5027 2.7K
R5028 4.7K
R5029 4.7K
D5007 BZ150
TP5003 TP5004 TP5001
S5001
1 OR AC55V
2 BL AC2·4V
3 Y AC21V
4 Y AC21V
5 W 0V
S5002
5 +33V
4
3 REG +12
2 REG +15
1 GND
S5004
10 T/S +B
9 ALWAYS +15
8 TIMER IN
7 AC2·4V
6 GND
5 NOT RECORDING
4 POWER CONTROL
3 ALWAYS +15
2 T/S +B
1 GND
S5006
6 GND
5 REG +12
4 GND
3 REG +12
2 GND
1 REG +12
S5005
6 NOT RECORDING
5 REG +12
4 REG + 9
3 GND
2 REG + 9
1 GND
S5003
1 ALWAYS +12
2 GND
R5009 0.22 1/2W
Q5001 TL-494C
C5022 0.1
R5006 33K
R5007 820
R5008 15K
R5010 10
Q5005 2SA608
R5015 100K
R5011 5.6K
VR5001 1K +9V
R5012 1.8K
R5013 2.4K
R5014 2.4K
D5004 1S2473 DS442
D5005 BZ110
R5016 75K
C5013 2.2μ/50
Q5006 2SC1983
Q5007 2SC536
Q5008 2SC536
Q5009 2SD863
Q5010 2SB698
Q5011 2SC536
Q5003 2SA768
R5038 3.9 1W
R5031 3.9K
R5036 680
D5008 1S2473 DS442
R5032 510
C5021 0.01
R5037 10K
C5017 100μ/35
D5009 GZA5.6Y XZ057
C5019 10μ/16
C5018 0.1μ/50
R5033 3.3K
R5034 1.8K
VR5003 1K +15V
R5035 1K
C5020 100μ/25
D5010 BZ182
R5040 1.5K
R5041 12K
D5012 GZA8.2Z XZ084
R5039 470 1/2
D5011 XZ127 GZA13X
L5001 300μH
R5003 47
R5004 470 3W
C5010 1000μ/16
GND CT RT

P.C.B. PW-1 DC POWER SUPPLY

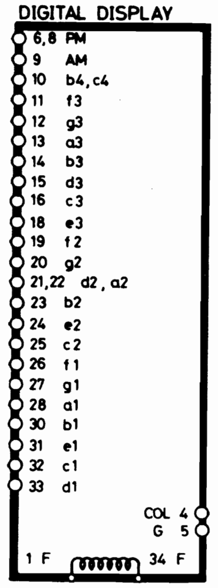

S5006
VR5001
S5005
S5003
S5004
S5002
Q5006
Q5003
Q5002
Q5001
L5003
C5009

P.C.B. TM-1 TIMER



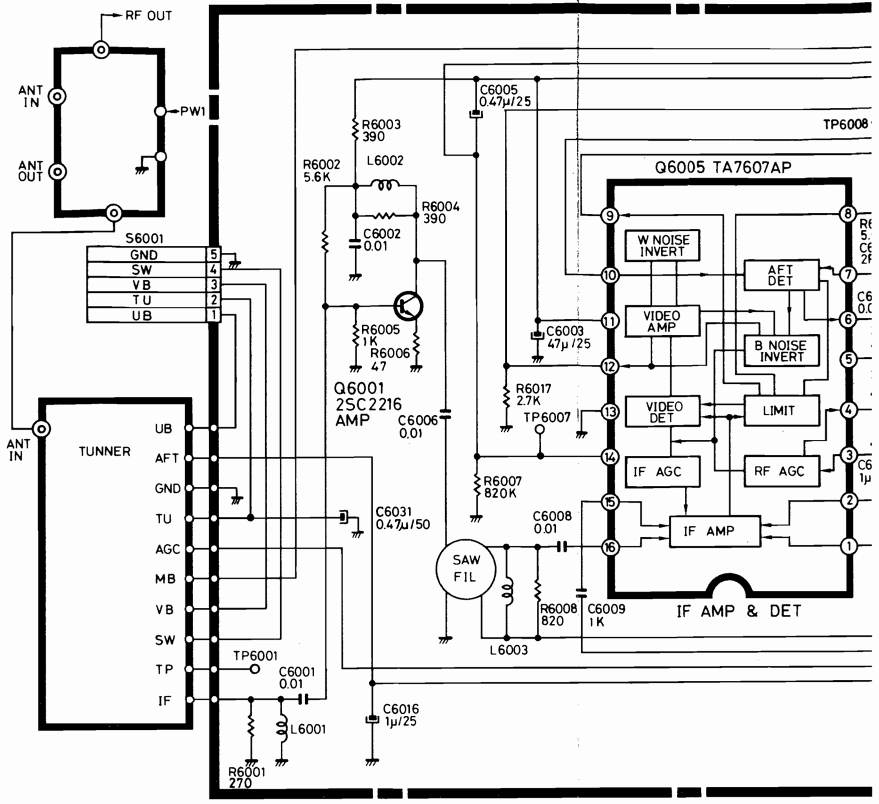
SW7001
R7027
R7028
C7006
C7005
C7004
C7003
R7025
R7024
C7001
SW7002
SW7003
SW7004
SW7005
SW7006
SW7007
Q7003
D7009
R7011
R7011
SW7
JCI-AuH
TM-1

P.C.B. TM-1 Australia New Zealand



DIGITAL DISPLAY
6,8 PM
9 AM
10 b4,c4
11 f3
12 g3
13 a3
14 b3
15 d3
16 c3
18 e3
19 f2
20 g2
21,22 d2, a2
23 b2
24 e2
25 c2
26 f1
27 g1
28 a1
30 b1
31 e1
32 c1
33 d1
COL 4
G 5
1 F
34 F

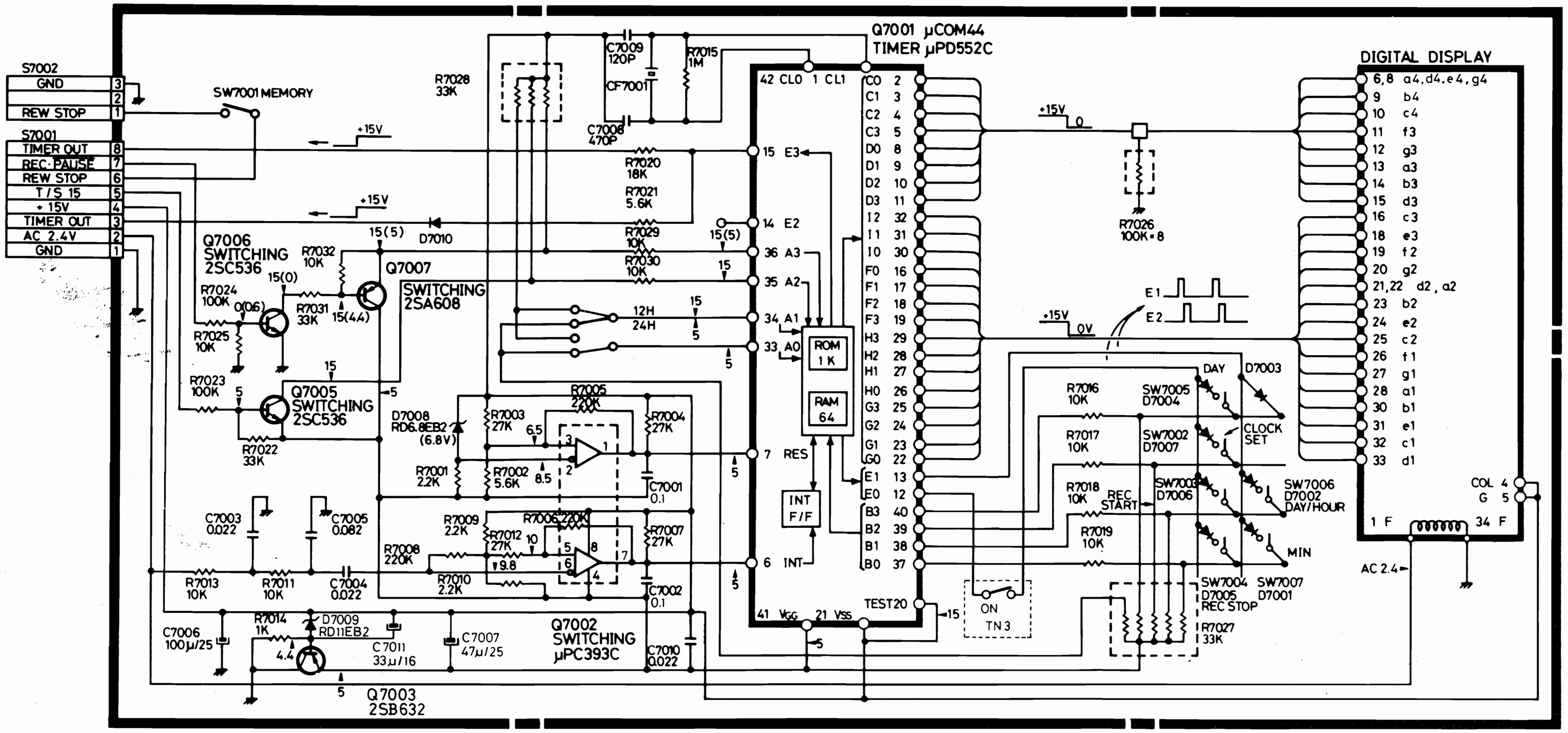
P.C.B. TN-1



RF OUT
ANT IN
ANT OUT
PW1
S6001
GND
SW
VB
TU
UB
ANT IN
TUNNER
UB
AFT
GND
TU
AGC
MB
VB
SW
TP
IF
TP6001
C6001 0.01
L6001
R6001 270
C6016 1μ/25
C6031 0.47μ/50
SAW FIL
L6003
R6002 5.6K
R6003 390
L6002
C6002 0.01
R6004 390
R6005 1K
R6006 47
Q6001 2SC2216 AMP
C6006 0.01
C6005 0.47μ/25
C6003 47μ/25
R6017 2.7K
TP6007
R6007 820K
C6008 0.01
R6008 820
C6009 1K
TP6008
Q6005 TA7607AP
W NOISE INVERT
VIDEO AMP
AFT DET
B NOISE INVERT
VIDEO DET
LIMIT
IF AGC
RF AGC
IF AMP
IF AMP & DET

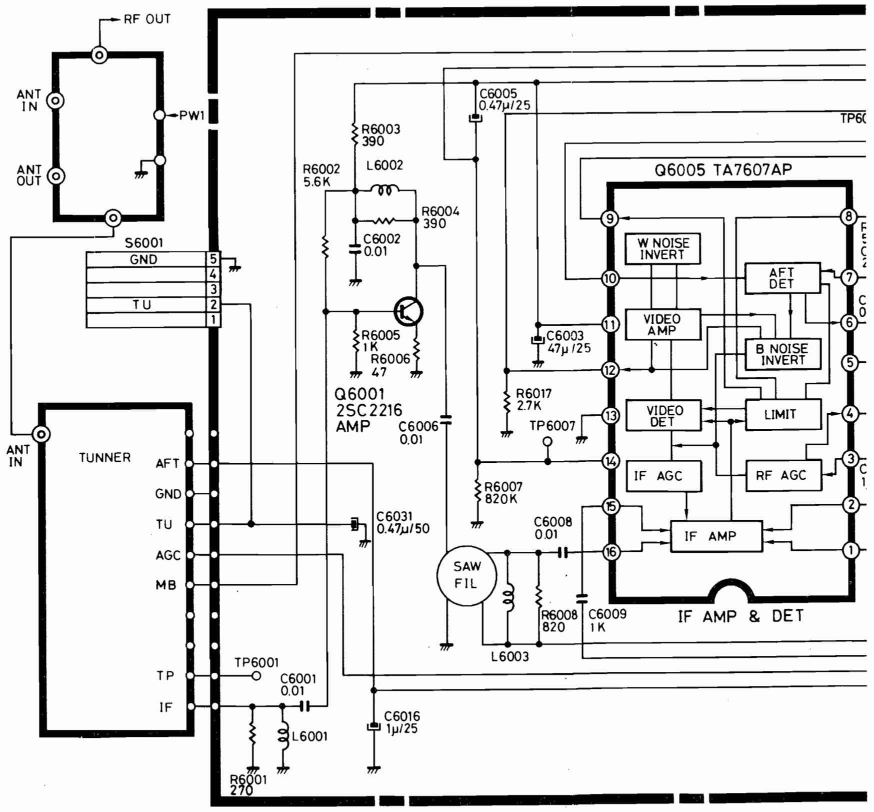
(South Africa, Australia, New Zealand, Indonesia R6025 5

P.C.B. TM-1 TIMER CIRCUIT



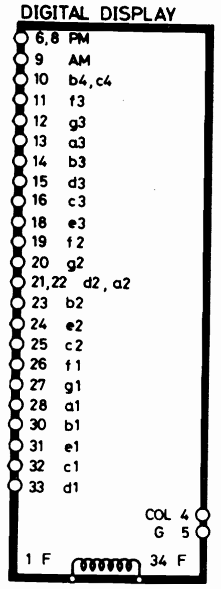
S7002
GND
REW STOP
S7001
TIMER OUT
REC·PAUSE
REW STOP
T/S 15
+15V
TIMER OUT
AC 2.4V
GND
SW7001 MEMORY
+15V
+15V
Q7006 SWITCHING 2SC536
R7032 10K
Q7007 SWITCHING 2SA608
R7024 100K
R7031 33K
R7025 10K
R7023 100K
Q7005 SWITCHING 2SC536
R7022 33K
D7010
D7008 RD6.8EB2 (6.8V)
R7003 27K
R7005 220K
R7004 27K
R7001 2.2K
R7002 5.6K
C7001 0.1
R7009 2.2K
R7012 27K
R7006 220K
R7007 27K
R7008 220K
R7010 2.2K
C7002 0.1
C7003 0.022
C7005 0.082
R7013 10K
R7011 10K
C7004 0.022
C7006 100μ/25
R7014 1K
D7009 RD11EB2
C7011 33μ/16
C7007 47μ/25
Q7002 SWITCHING μPC393C
C7010 0.022
Q7003 2SB632
R7028 33K
C7009 120P
CF7001
C7008 470P
R7015 1M
R7020 18K
R7021 5.6K
R7029 10K
R7030 10K
12H
24H
Q7001 μCOM44 TIMER μPD552C
ROM 1K
RAM 64
INT F/F
42 CL0
1 CL1
15 E3
14 E2
36 A3
35 A2
34 A1
33 A0
7 RES
6 INT
41 VGG
21 VSS
TEST 20
ON
TN3
R7026 100K×8
E1
E2
+15V
0V
R7016 10K
R7017 10K
R7018 10K
R7019 10K
SW7005 D7004
SW7002 D7007
SW7003 D7006
SW7004 D7005 REC STOP
SW7007 D7001
SW7006 D7002 DAY/HOUR
DAY
D7003
CLOCK SET
REC START
MIN
R7027 33K
DIGITAL DISPLAY
6,8 a4,d4,e4,g4
9 b4
10 c4
11 f3
12 g3
13 a3
14 b3
15 d3
16 c3
18 e3
19 f2
20 g2
21,22 d2, a2
23 b2
24 e2
25 c2
26 f1
27 g1
28 a1
30 b1
31 e1
32 c1
33 d1
COL 4
G 5
1 F
34 F
AC 2.4

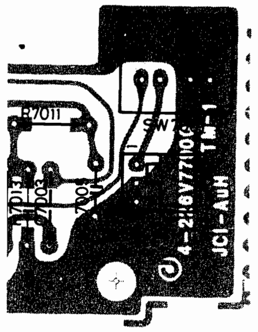
P.C.B.



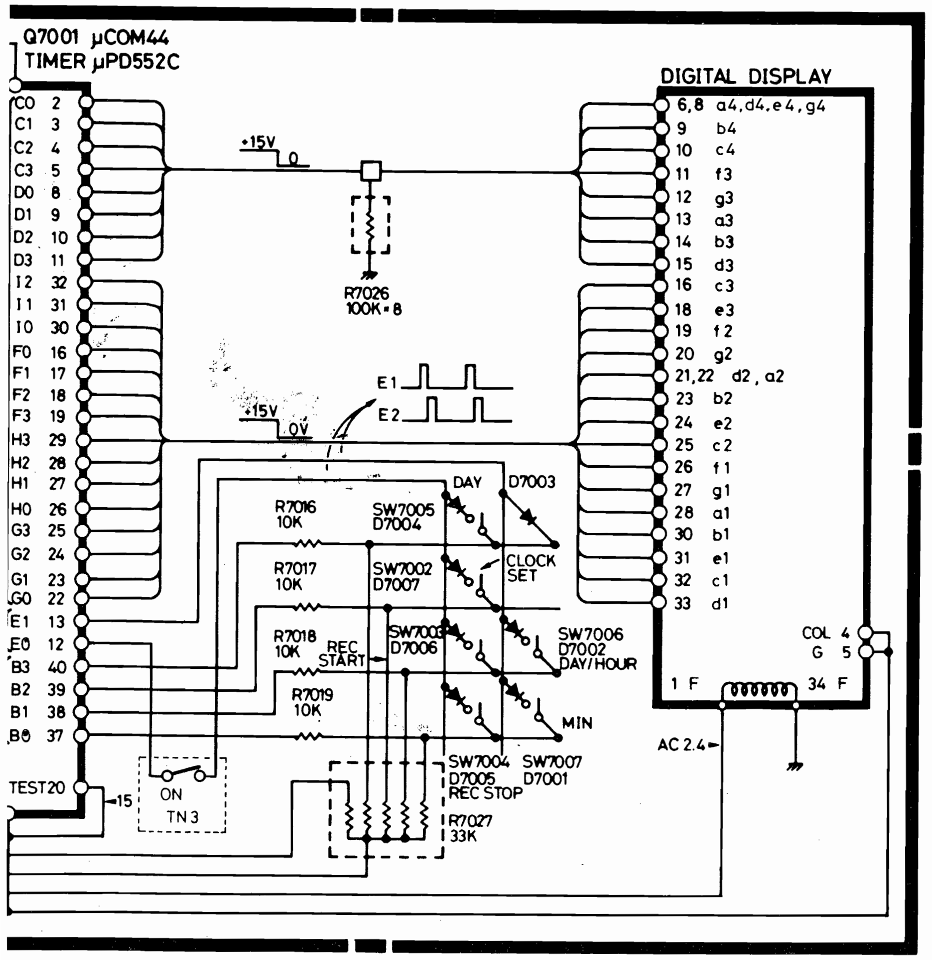
RF OUT
ANT IN
ANT OUT
PW1
S6001
GND
TU
ANT IN
TUNNER
AFT
GND
TU
AGC
MB
TP
IF
TP6001
C6001 0.01
L6001
R6001 270
C6016 1μ/25
C6031 0.47μ/50
SAW FIL
L6003
R6002 5.6K
R6003 390
L6002
C6002 0.01
R6004 390
R6005 1K
R6006 47
Q6001 2SC2216 AMP
C6006 0.01
C6005 0.47μ/25
C6003 47μ/25
R6017 2.7K
TP6007
R6007 820K
C6008 0.01
R6008 820
C6009 1K
Q6005 TA7607AP
W NOISE INVERT
VIDEO AMP
AFT DET
B NOISE INVERT
VIDEO DET
LIMIT
IF AGC
RF AGC
IF AMP
IF AMP & DET

P.C.B. TM-1 Australia New Zealand

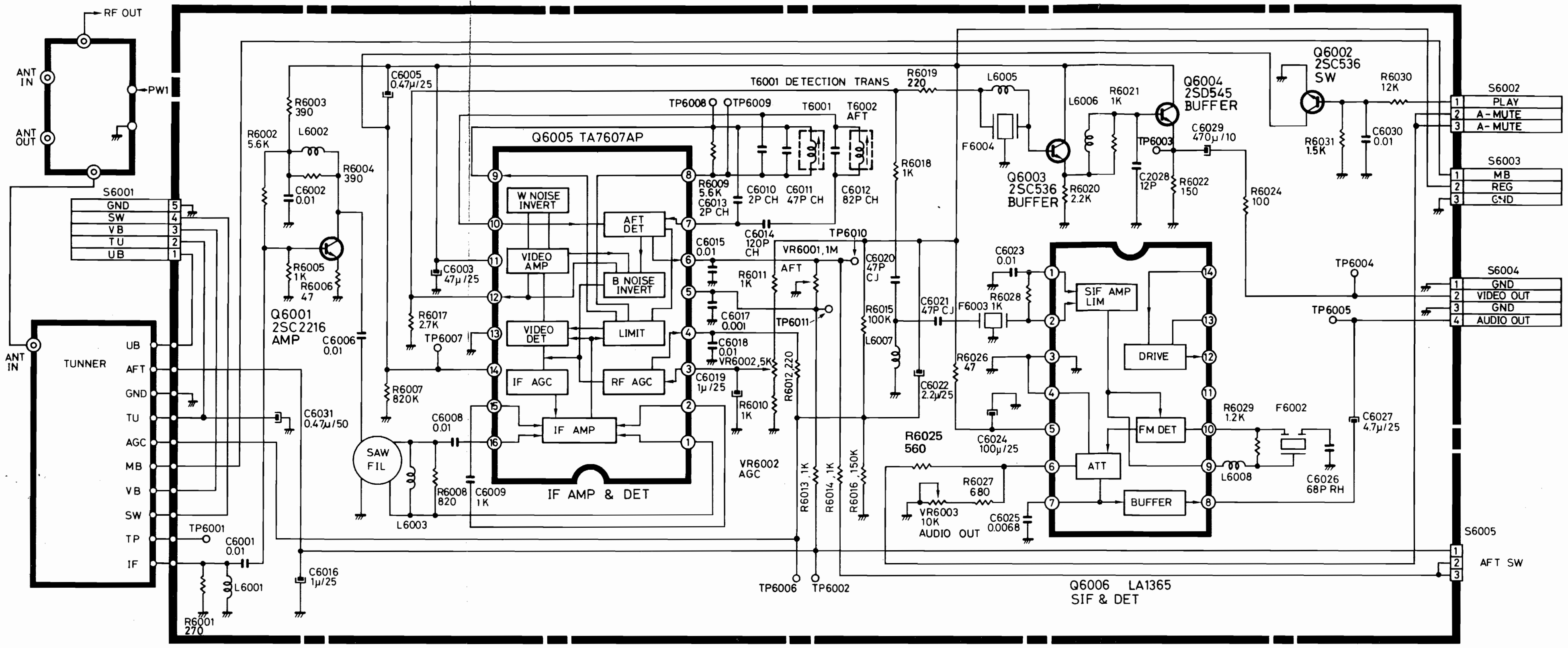

DIGITAL DISPLAY
6,8 PM
9 AM
10 b4,c4
11 f3
12 g3
13 a3
14 b3
15 d3
16 c3
18 e3
19 f2
20 g2
21,22 d2, a2
23 b2
24 e2
25 c2
26 f1
27 g1
28 a1
30 b1
31 e1
32 c1
33 d1
COL 4
G 5
1 F
34 F


R7011
SW7
4-218-777-01
JCI-AUH TM-1

CIRCUIT

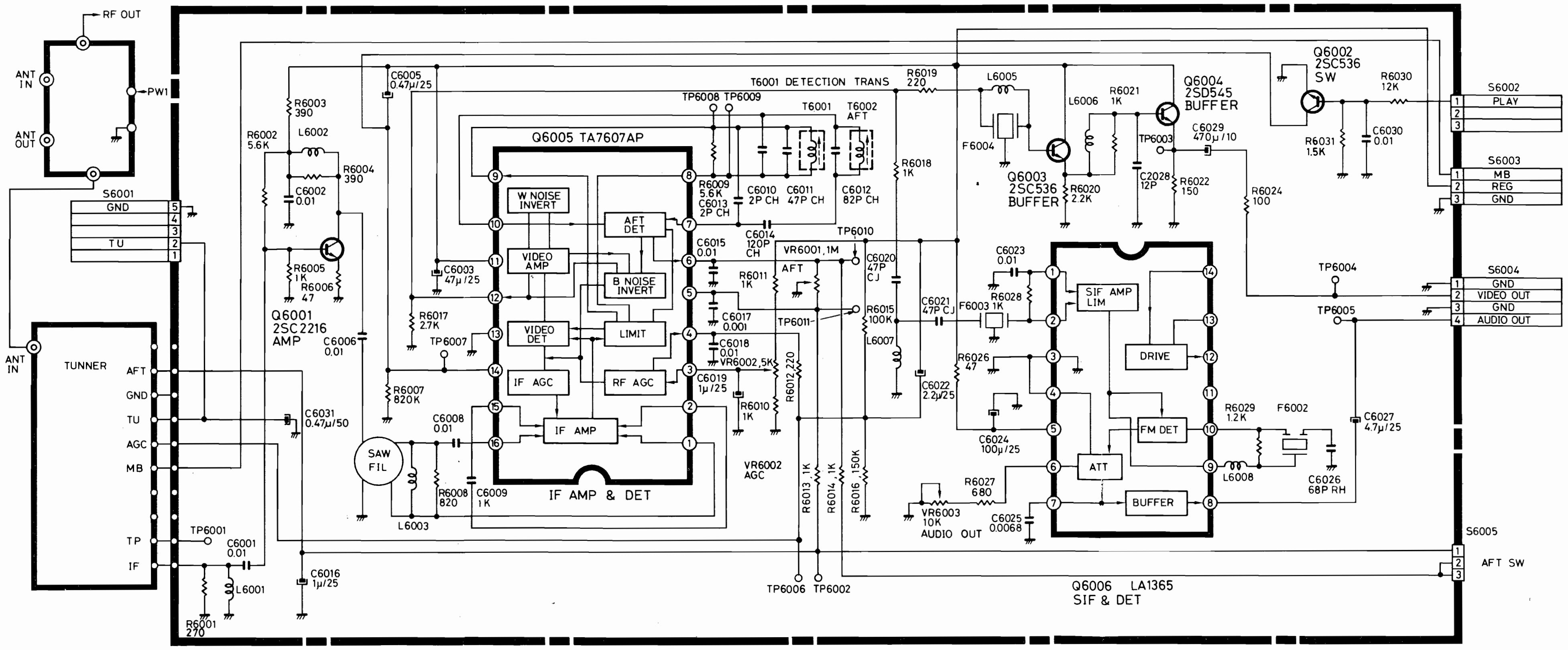

Q7001 μCOM44
TIMER μPD552C
CO 2
C1 3
C2 4
C3 5
DO 8
D1 9
D2 10
D3 11
I2 32
I1 31
I0 30
FO 16
F1 17
F2 18
F3 19
H3 29
H2 28
H1 27
H0 26
G3 25
G2 24
G1 23
G0 22
E1 13
E0 12
B3 40
B2 39
B1 38
B0 37
TEST20
15
ON
TN3
+15V
R7026
100K×8
+15V
0V
E1
E2
R7016
10K
SW7005
D7004
DAY
D7003
R7017
10K
SW7002
D7007
CLOCK
SET
R7018
10K
REC
START
SW7003
D7006
SW7006
D7002
DAY/HOUR
R7019
10K
MIN
SW7004
D7005
REC STOP
SW7007
D7001
R7027
33K
AC 2.4
DIGITAL DISPLAY
6,8 a4,d4,e4,g4
9 b4
10 c4
11 f3
12 g3
13 a3
14 b3
15 d3
16 c3
18 e3
19 f2
20 g2
21,22 d2, a2
23 b2
24 e2
25 c2
26 f1
27 g1
28 a1
30 b1
31 e1
32 c1
33 d1
COL 4
G 5
1 F
34 F

P.C.B. TN-1 IF CIRCUIT

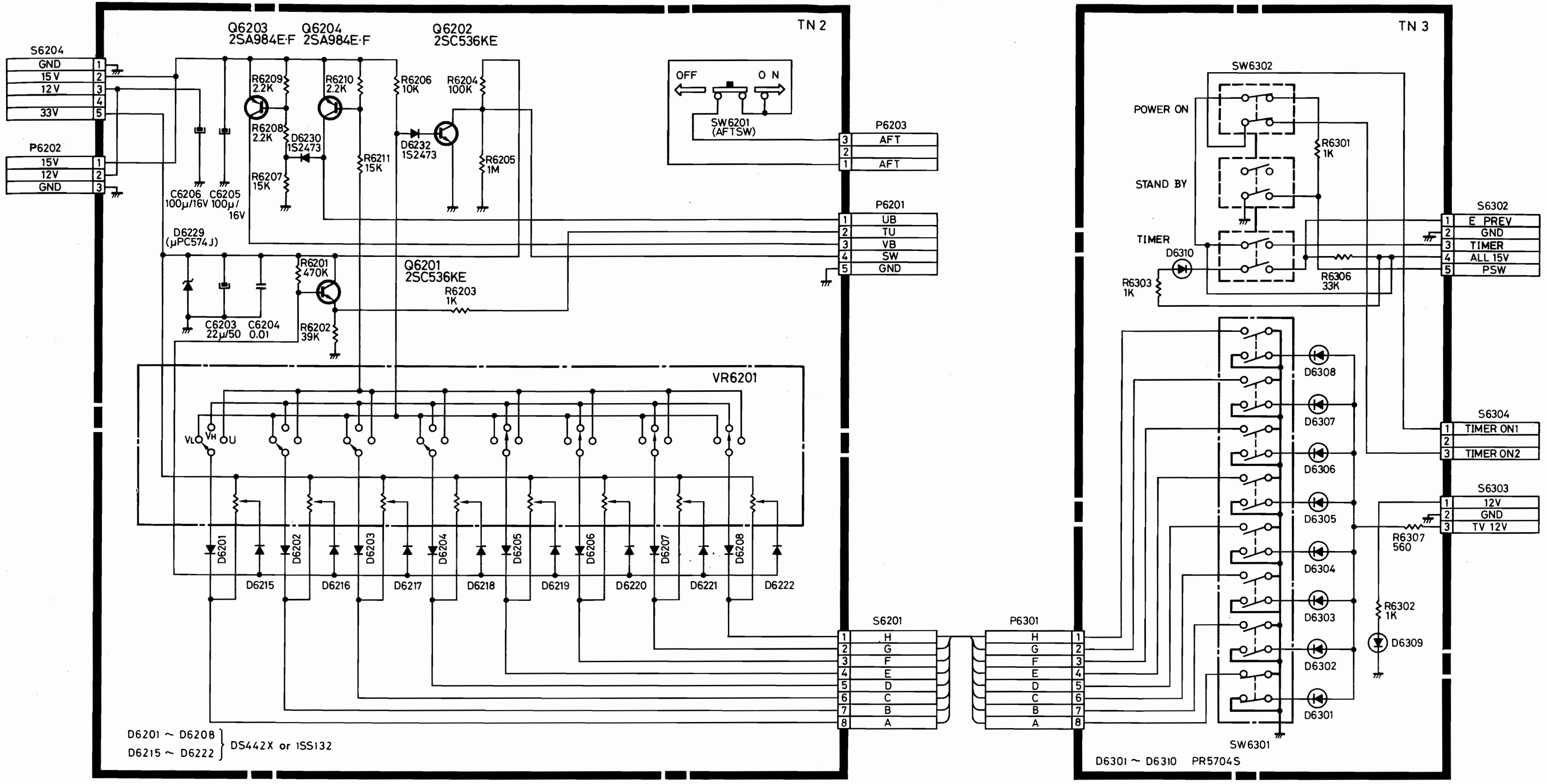

RF OUT
ANT IN
ANT OUT
PW1
S6001
GND
SW
VB
TU
UB
TUNNER
UB
AFT
GND
TU
AGC
MB
VB
SW
TP
IF
TP6001
C6001 0.01
L6001
R6001 270
C6016 1μ/25
C6031 0.47μ/50
R6002 5.6K
R6003 390
L6002
R6004 390
C6002 0.01
R6005 1K
R6006 47
Q6001 2SC2216 AMP
C6006 0.01
C6005 0.47μ/25
C6003 47μ/25
R6017 2.7K
TP6007
R6007 820K
C6008 0.01
SAW FIL
R6008 820
C6009 1K
L6003
Q6005 TA7607AP
W NOISE INVERT
VIDEO AMP
VIDEO DET
IF AGC
IF AMP
AFT DET
B NOISE INVERT
LIMIT
RF AGC
IF AMP & DET
T6001 DETECTION TRANS
TP6008
TP6009
T6001
T6002 AFT
R6009 5.6K
C6013 2P CH
C6010 2P CH
C6011 47P CH
C6012 82P CH
C6014 120P CH
C6015 0.01
R6011 1K
C6017 0.001
C6018 0.01
VR6002 5K
C6019 1μ/25
R6010 1K
R6012 220
TP6011
VR6001 1M
AFT
TP6010
VR6002 AGC
R6013 1K
R6014 1K
R6016 150K
TP6006
TP6002
R6019 220
R6018 1K
C6020 47P CJ
R6015 100K
L6007
C6021 47P CJ
C6022 2.2μ/25
R6025 560
L6005
F6004
L6006
Q6003 2SC536 BUFFER
R6020 2.2K
R6021 1K
Q6004 2SD545 BUFFER
TP6003
C6029 470μ/10
C2028 12P
R6022 150
R6024 100
F6003 1K
R6028
R6026 47
C6023 0.01
C6024 100μ/25
R6027 680
VR6003 10K AUDIO OUT
C6025 0.0068
SIF AMP LIM
DRIVE
FM DET
ATT
BUFFER
Q6006 LA1365 SIF & DET
R6029 1.2K
F6002
C6026 68P RH
C6027 4.7μ/25
L6008
Q6002 2SC536 SW
R6030 12K
R6031 1.5K
C6030 0.01
S6002
PLAY
A-MUTE
A-MUTE
S6003
MB
REG
GND
TP6004
TP6005
S6004
GND
VIDEO OUT
GND
AUDIO OUT
S6005
AFT SW

(South Africa, Australia, New Zealand, Indonesia R6025 560 → OPEN)

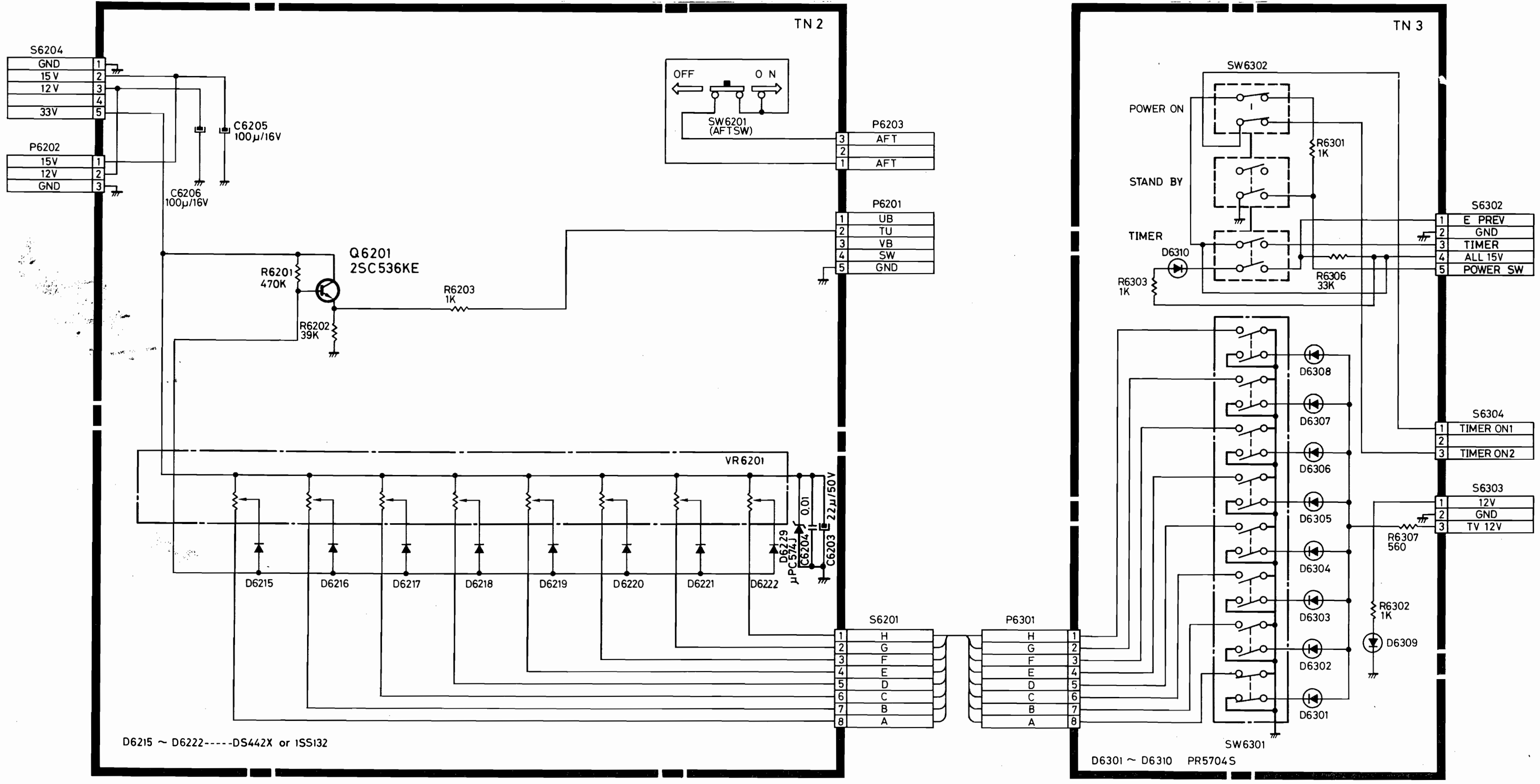
P.C.B. TN-1 IF CIRCUIT (U.K., H.K.)


RF OUT
ANT IN
ANT OUT
PW1
S6001
GND
TU
TUNNER
AFT
GND
TU
AGC
MB
TP
IF
TP6001
C6001 0.01
L6001
R6001 270
C6016 1μ/25
C6031 0.47μ/50
R6002 5.6K
R6003 390
L6002
R6004 390
C6002 0.01
R6005 1K
R6006 47
Q6001 2SC2216 AMP
C6006 0.01
C6005 0.47μ/25
C6003 47μ/25
R6017 2.7K
TP6007
R6007 820K
C6008 0.01
SAW FIL
R6008 820
C6009 1K
L6003
Q6005 TA7607AP
W NOISE INVERT
VIDEO AMP
VIDEO DET
IF AGC
IF AMP
AFT DET
B NOISE INVERT
LIMIT
RF AGC
IF AMP & DET
T6001 DETECTION TRANS
TP6008 TP6009
T6001
T6002 AFT
R6009 5.6K
C6013 2P CH
C6010 2P CH
C6011 47P CH
C6012 82P CH
C6014 120P CH
C6015 0.01
R6011 1K
C6017 0.001
C6018 0.01
VR6002 5K
C6019 1μ/25
R6010 1K
R6012 220
TP6011
VR6001 1M
AFT
TP6010
VR6002 AGC
R6013 1K
R6014 1K
R6016 150K
TP6006
TP6002
R6019 220
R6018 1K
C6020 47P CJ
R6015 100K
L6007
C6021 47P CJ
C6022 2.2μ/25
L6005
F6004
L6006
Q6003 2SC536 BUFFER
R6020 2.2K
R6021 1K
Q6004 2SD545 BUFFER
TP6003
C6029 470μ/10
C2028 12P
R6022 150
R6024 100
F6003 1K
R6028
R6026 47
C6023 0.01
C6024 100μ/25
R6027 680
VR6003 10K AUDIO OUT
C6025 0.0068
SIF AMP LIM
DRIVE
FM DET
ATT
BUFFER
Q6006 LA1365 SIF & DET
R6029 1.2K
F6002
C6026 68P RH
C6027 4.7μ/25
L6008
Q6002 2SC536 SW
R6030 12K
R6031 1.5K
C6030 0.01
S6002
PLAY
S6003
MB
REG
GND
TP6004
TP6005
S6004
GND
VIDEO OUT
GND
AUDIO OUT
S6005
AFT SW

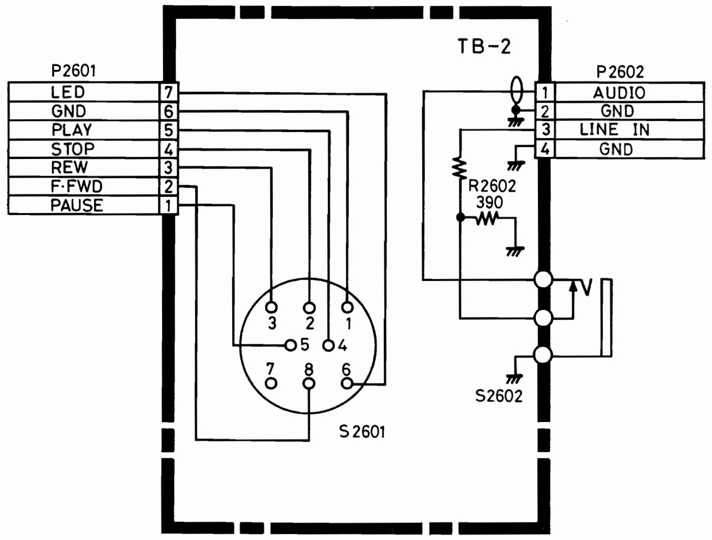
P.C.B. TN-2 · 3 CHANNEL PRESET/SELECT CIRCUIT


TN 2
TN 3
S6204
GND
15 V
12 V
33V
P6202
15V
12V
GND
Q6203
2SA984E·F
Q6204
2SA984E·F
Q6202
2SC536KE
R6209 2.2K
R6210 2.2K
R6206 10K
R6204 100K
R6208 2.2K
D6230 1S2473
D6232 1S2473
R6205 1M
R6211 15K
R6207 15K
C6206 100μ/16V
C6205 100μ/16V
D6229 (μPC574J)
R6201 470K
Q6201
2SC536KE
R6203 1K
C6203 22μ/50
C6204 0.01
R6202 39K
OFF
O N
SW6201 (AFTSW)
P6203
AFT
AFT
P6201
UB
TU
VB
SW
GND
VR6201
VL
VH
U
D6201
D6202
D6203
D6204
D6205
D6206
D6207
D6208
D6215
D6216
D6217
D6218
D6219
D6220
D6221
D6222
S6201
P6301
H
G
F
E
D
C
B
A
D6201 ~ D6208
D6215 ~ D6222
DS442X or 1SS132
SW6302
POWER ON
STAND BY
TIMER
D6310
R6301 1K
R6303 1K
R6306 33K
S6302
E PREV
GND
TIMER
ALL 15V
PSW
D6308
D6307
D6306
D6305
D6304
D6303
D6302
D6301
S6304
TIMER ON1
TIMER ON2
S6303
12V
GND
TV 12V
R6307 560
R6302 1K
D6309
SW6301
D6301 ~ D6310 PR5704S

P.C.B. TN-2 · 3 CHANNEL PRESET/SELECT CIRCUIT (U.K., H.K.)

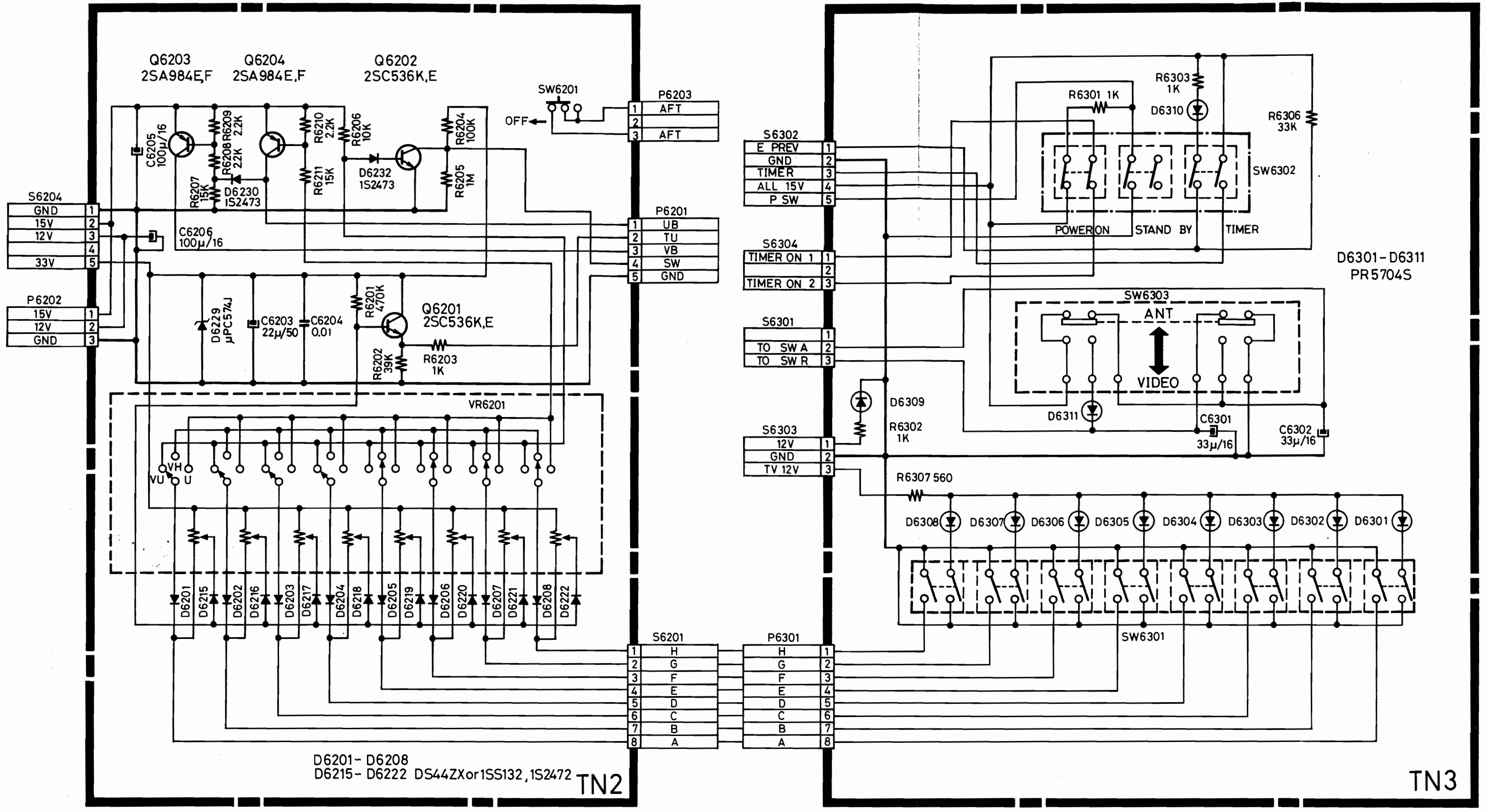

TN 2
TN 3
S6204
GND
15 V
12 V
33V
P6202
15V
12V
GND
C6205 100μ/16V
C6206 100μ/16V
OFF
O N
SW6201 (AFTSW)
P6203
AFT
AFT
P6201
UB
TU
VB
SW
GND
Q6201
2SC536KE
R6201 470K
R6203 1K
R6202 39K
VR6201
D6215
D6216
D6217
D6218
D6219
D6220
D6221
D6222
D6229 μPC574J
C6204 0.01
C6203 22μ/50V
S6201
P6301
H
G
F
E
D
C
B
A
D6215 ~ D6222-----DS442X or 1SS132
SW6302
POWER ON
STAND BY
TIMER
D6310
R6301 1K
R6303 1K
R6306 33K
S6302
E PREV
GND
TIMER
ALL 15V
POWER SW
D6308
D6307
D6306
D6305
D6304
D6303
D6302
D6301
S6304
TIMER ON1
TIMER ON2
S6303
12V
GND
TV 12V
R6307 560
R6302 1K
D6309
SW6301
D6301 ~ D6310 PR5704S

P.C.B. TB-2 TERMINAL CIRCUIT

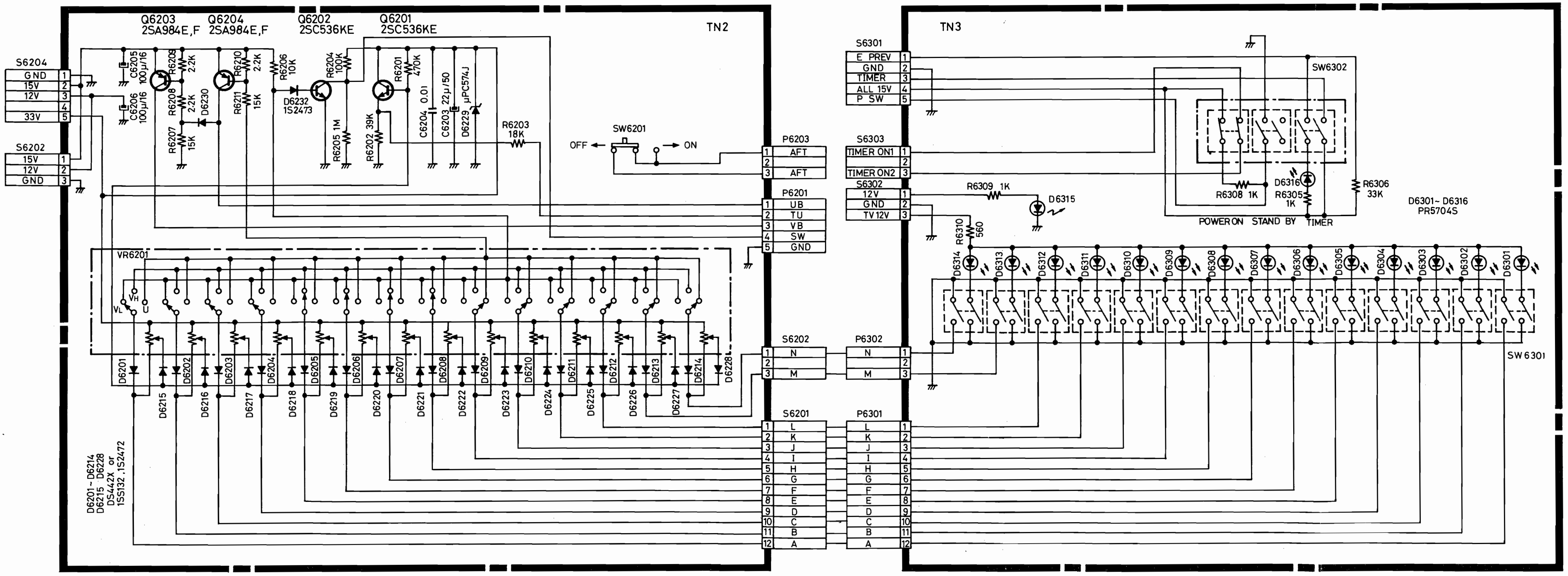

TB-2
P2601
LED
GND
PLAY
STOP
REW
F·FWD
PAUSE
P2602
AUDIO
GND
LINE IN
GND
R2602 390
S2601
S2602

❶

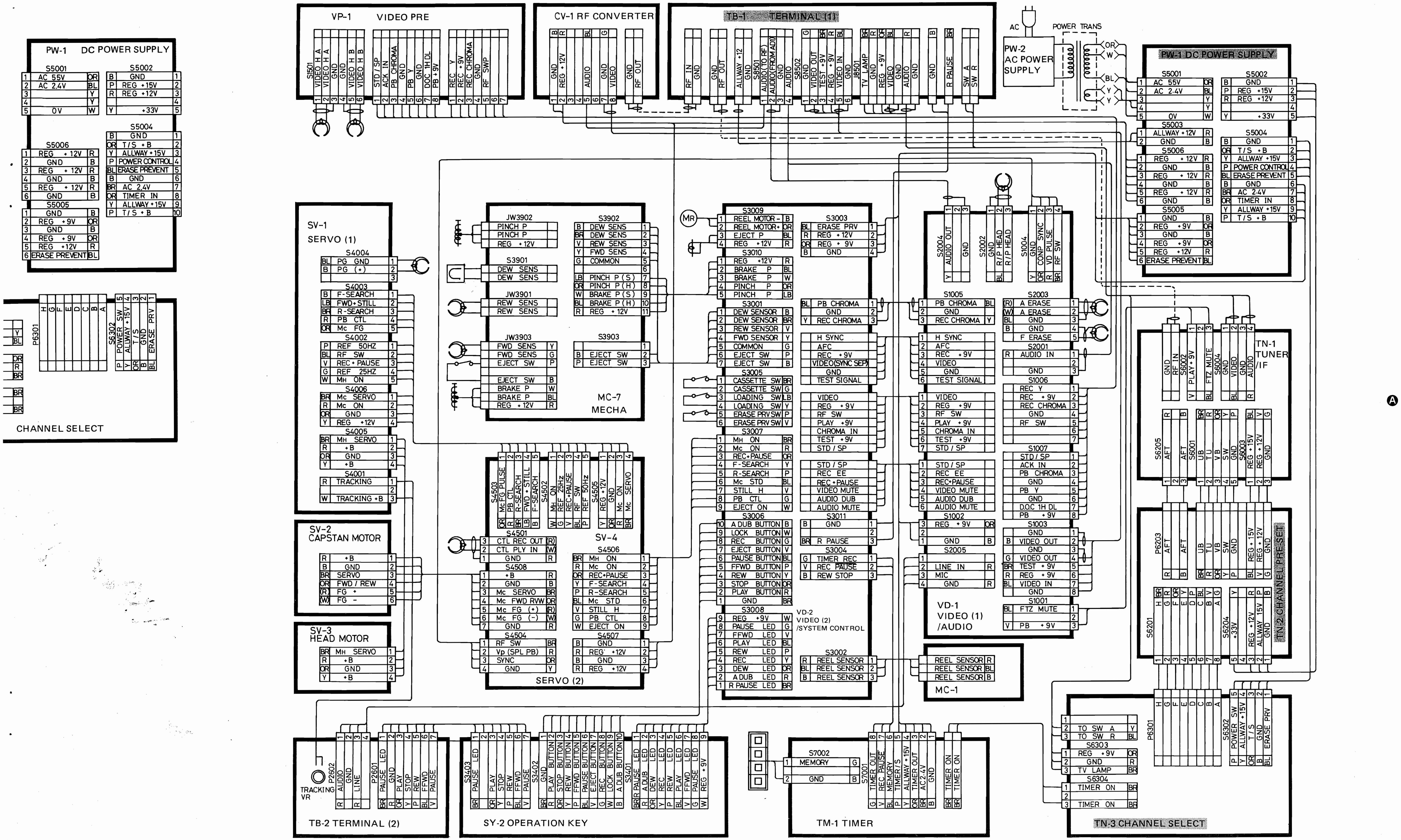
P.C.B. TN-2 · 3 CHANNEL PRESET/SELECT CIRCUIT (Australia, New Zealand)


Q6203
2SA984E,F
Q6204
2SA984E,F
Q6202
2SC536K,E
SW6201
OFF
P6203
AFT
AFT
C6205 100µ/16
R6208 22K
R6209 22K
R6210 22K
R6206 10K
R6204 100K
R6207 15K
D6230 1S2473
R6211 15K
D6232 1S2473
R6205 1M
S6204
GND
15V
12V
33V
C6206 100µ/16
P6201
UB
TU
VB
SW
GND
P6202
15V
12V
GND
D6229 µPC574J
C6203 22µ/50
C6204 0.01
R6201 470K
Q6201
2SC536K,E
R6202 39K
R6203 1K
VR6201
VH
VU
U
D6201
D6215
D6202
D6216
D6203
D6217
D6204
D6218
D6205
D6219
D6206
D6220
D6207
D6221
D6208
D6222
S6201
H
G
F
E
D
C
B
A
D6201- D6208
D6215- D6222 DS442X or 1SS132, 1S2472
TN2
S6302
E PREV
GND
TIMER
ALL 15V
P SW
S6304
TIMER ON 1
TIMER ON 2
S6301
TO SW A
TO SW R
S6303
12V
GND
TV 12V
R6301 1K
R6303 1K
D6310
R6306 33K
SW6302
POWER ON
STAND BY
TIMER
D6301 - D6311
PR5704S
SW6303
ANT
VIDEO
D6309
R6302 1K
D6311
C6301 33µ/16
C6302 33µ/16
R6307 560
D6308
D6307
D6306
D6305
D6304
D6303
D6302
D6301
SW6301
P6301
H
G
F
E
D
C
B
A
TN3

P.C.B. TN-2 · 3 CHANNEL PRESET/SELECT CIRCUIT (VTC5400PB)

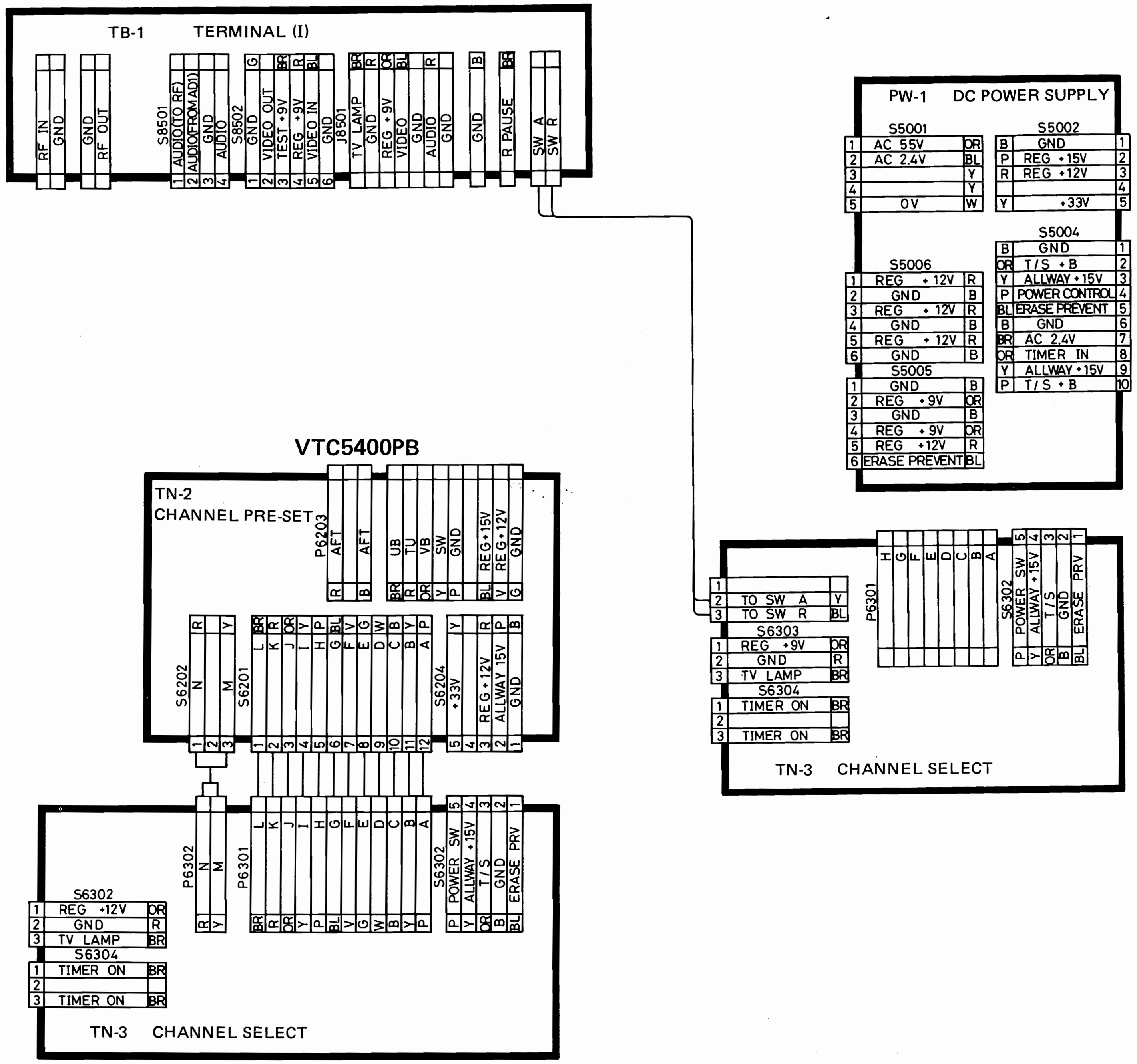

Q6203
2SA984E,F
Q6204
2SA984E,F
Q6202
2SC536KE
Q6201
2SC536KE
TN2
S6204
GND
15V
12V
33V
C6205 100µ/16
C6206 100µ/16
R6209 2.2K
R6208 2.2K
D6230
R6207 15K
R6210 2.2K
R6211 15K
R6206 10K
D6232 1S2473
R6204 100K
R6205 1M
R6201 470K
R6202 39K
C6204 0.01
C6203 22µ/50
D6229 µPC574J
R6203 18K
SW6201
OFF
ON
S6202
15V
12V
GND
P6203
AFT
AFT
P6201
UB
TU
VB
SW
GND
VR6201
VL
VH
C
D6201
D6215
D6202
D6216
D6203
D6217
D6204
D6218
D6205
D6219
D6206
D6220
D6207
D6221
D6208
D6222
D6209
D6223
D6210
D6224
D6211
D6225
D6212
D6226
D6213
D6227
D6214
D6228
D6201~D6214
D6215~D6228
DS442X or
1SS132, 1S2472
S6202
N
M
S6201
L
K
J
I
H
G
F
E
D
C
B
A
P6302
N
M
P6301
L
K
J
I
H
G
F
E
D
C
B
A
TN3
S6301
E PREV
GND
TIMER
ALL 15V
P SW
S6303
TIMER ON1
TIMER ON2
S6302
12V
GND
TV 12V
SW6302
R6309 1K
D6315
R6310 560
R6308 1K
D6316
R6305 1K
R6306 33K
POWER ON
STAND BY
TIMER
D6301~D6316
PR5704S
D6314
D6313
D6312
D6311
D6310
D6309
D6308
D6307
D6306
D6305
D6304
D6303
D6302
D6301
SW6301

OVER ALL WIRING DIAGRAM

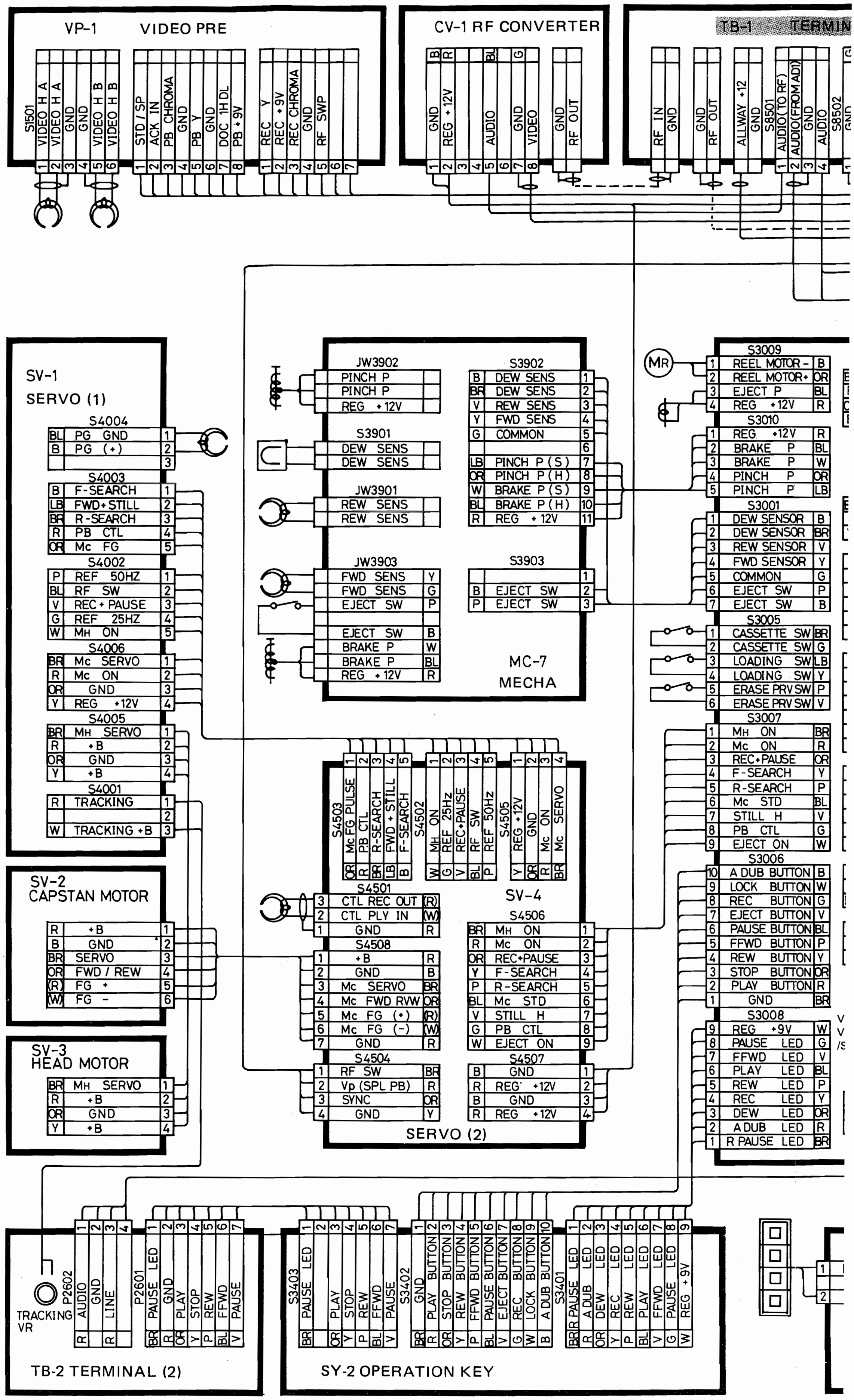

PW-1 DC POWER SUPPLY
S5001
AC 55V
AC 2.4V
0V
S5002
GND
REG +15V
REG +12V
+33V
S5003
ALLWAY +12V
S5004
T/S +B
POWER CONTROL
ERASE PREVENT
AC 2.4V
TIMER IN
ALLWAY +15V
S5005
S5006
REG +12V
REG +9V
CHANNEL SELECT
P6301
S6302
POWER SW
ALLWAY +15V
T/S
ERASE PRV
VP-1 VIDEO PRE
S1501
VIDEO H A
VIDEO H B
STD / SP
ACK IN
PB CHROMA
PB Y
DOC 1H DL
PB +9V
REC Y
REC +9V
REC CHROMA
RF SWP
CV-1 RF CONVERTER
REG +12V
AUDIO
VIDEO
RF OUT
TB-1 TERMINAL (1)
RF IN
ALLWAY +12
S8501
AUDIO (TO RF)
AUDIO (FROM ADJ)
S8502
VIDEO OUT
TEST +9V
VIDEO IN
J8501
TV LAMP
R PAUSE
SW A
SW R
AC
POWER TRANS
PW-2
AC POWER
SUPPLY
SV-1
SERVO (1)
S4004
PG GND
PG (+)
S4003
F-SEARCH
FWD+STILL
R-SEARCH
PB CTL
Mc FG
S4002
REF 50HZ
RF SW
REC+PAUSE
REF 25HZ
MH ON
S4006
Mc SERVO
Mc ON
S4005
MH SERVO
+B
S4001
TRACKING
TRACKING +B
SV-2
CAPSTAN MOTOR
SERVO
FWD / REW
FG +
FG −
SV-3
HEAD MOTOR
MC-7
MECHA
JW3902
PINCH P
S3902
DEW SENS
REW SENS
FWD SENS
COMMON
PINCH P (S)
PINCH P (H)
BRAKE P (S)
BRAKE P (H)
S3901
JW3901
JW3903
EJECT SW
BRAKE P
S3903
SV-4
SERVO (2)
S4503
S4502
S4505
S4501
CTL REC OUT
CTL PLY IN
S4506
S4508
Mc FWD RVW
Mc FG (+)
Mc FG (−)
S4504
Vp (SPL PB)
SYNC
S4507
MR
S3009
REEL MOTOR −
REEL MOTOR +
EJECT P
S3010
BRAKE P
PINCH P
S3001
DEW SENSOR
REW SENSOR
FWD SENSOR
EJECT SW
S3005
CASSETTE SW
LOADING SW
ERASE PRV SW
S3007
REC+PAUSE
STILL H
EJECT ON
S3006
A DUB BUTTON
LOCK BUTTON
REC BUTTON
EJECT BUTTON
PAUSE BUTTON
FFWD BUTTON
REW BUTTON
STOP BUTTON
PLAY BUTTON
S3008
PAUSE LED
FFWD LED
PLAY LED
REW LED
REC LED
DEW LED
A DUB LED
R PAUSE LED
VD-2
VIDEO (2)
/SYSTEM CONTROL
S3003
ERASE PRV
H SYNC
AFC
VIDEO (SYNC SEP)
TEST SIGNAL
PLAY +9V
CHROMA IN
REC EE
VIDEO MUTE
AUDIO DUB
AUDIO MUTE
S3011
S3004
TIMER REC
REC PAUSE
REW STOP
S3002
REEL SENSOR
MC-1
VD-1
VIDEO (1)
/AUDIO
S2004
AUDIO OUT
S2002
R/P HEAD
S1004
COMP. SYNC
VD PULSE
S1005
S2003
A ERASE
F ERASE
S2001
AUDIO IN
S1006
S1007
S1002
S2005
LINE IN
MIC
S1003
TEST +9V
S1001
FTZ MUTE
TN-1
TUNER
/IF
S6002
PLAY +9V
S6004
S6205
AFT
S6001
UB
TU
VB
SW
S6003
TN-2 CHANNEL PRE SET
P6203
S6201
S6204
TB-2 TERMINAL (2)
P2602
LINE
P2601
TRACKING VR
SY-2 OPERATION KEY
S3403
S3402
S3401
REG +9V
TM-1 TIMER
S7002
MEMORY
S7001
TIMER OUT
TIMER/S
AC 2.4V
TIMER ON
TN-3 CHANNEL SELECT
TO SW A
TO SW R
S6303
S6304
P6301
S6302
Ⓐ

Australia, New Zealand

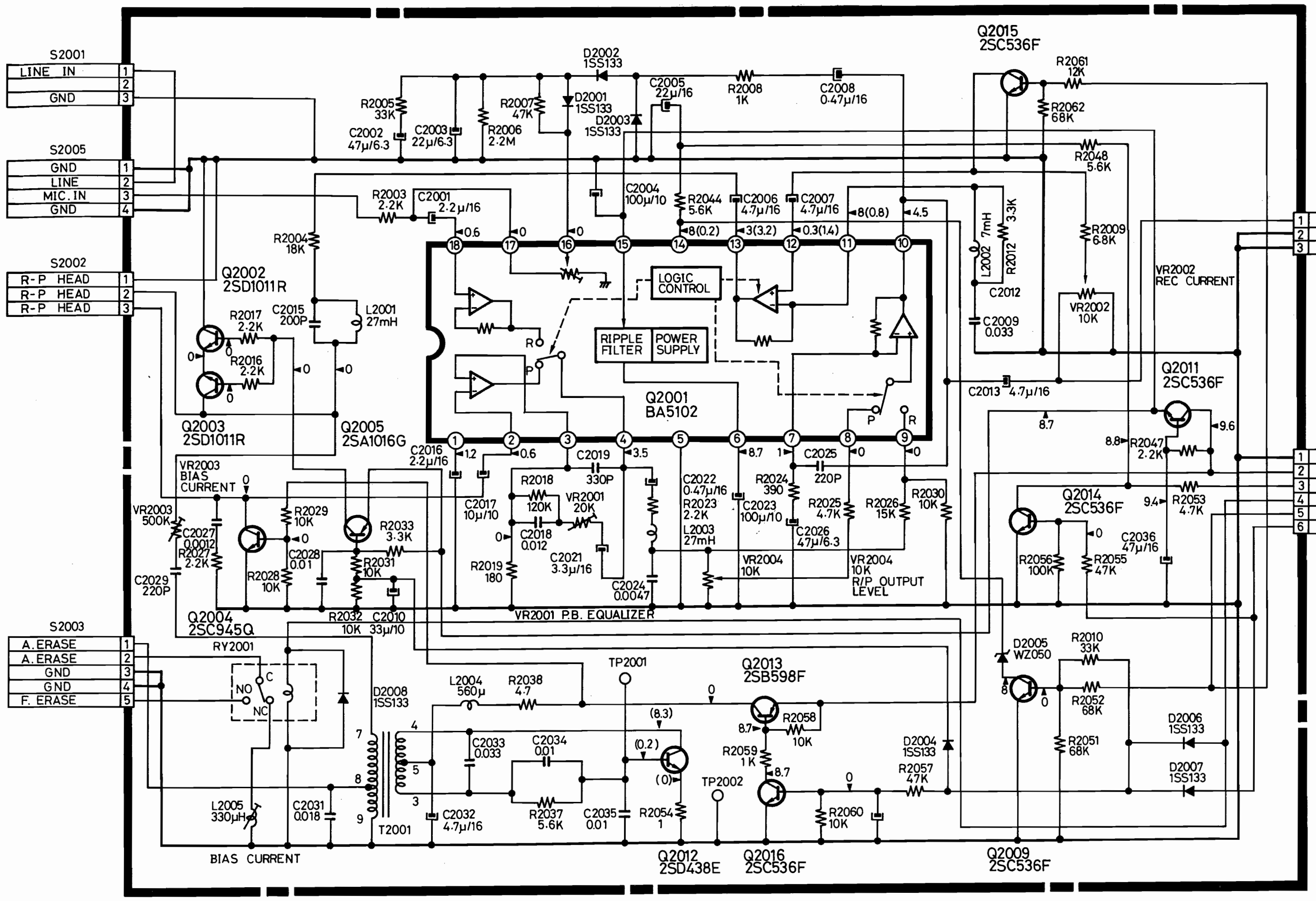
VTC5400PB


TB-1 TERMINAL (I)
PW-1 DC POWER SUPPLY
S5001
S5002
S5004
S5005
S5006
TN-3 CHANNEL SELECT
S6303
S6304
P6301
S6302
TN-2
CHANNEL PRE-SET
P6203
S6202
S6201
S6204
P6302
P6301
S6302
S6304
TN-3 CHANNEL SELECT

OVER ALL WIRING


VP-1 VIDEO PRE
CV-1 RF CONVERTER
TB-1 TERMIN
SV-1
SERVO (1)
S4004
S4003
S4002
S4006
S4005
S4001
SV-2
CAPSTAN MOTOR
SV-3
HEAD MOTOR
JW3902
S3902
S3901
JW3901
JW3903
S3903
MC-7
MECHA
MR
S3009
S3010
S3001
S3005
S3007
S3006
S3008
S4503
S4502
S4505
S4501
SV-4
S4506
S4508
S4504
S4507
SERVO (2)
P2602
TRACKING VR
P2601
TB-2 TERMINAL (2)
S3403
S3402
S3401
SY-2 OPERATION KEY

P.C.B. VD-1 AUDIO CIRCUIT


S2001
LINE IN
GND
S2005
GND
LINE
MIC. IN
GND
S2002
R-P HEAD
R-P HEAD
R-P HEAD
S2003
A. ERASE
A. ERASE
GND
GND
F. ERASE
RY2001
Q2002 2SD1011R
Q2003 2SD1011R
Q2005 2SA1016G
Q2004 2SC945Q
VR2003 BIAS CURRENT
Q2001 BA5102
LOGIC CONTROL
RIPPLE FILTER
POWER SUPPLY
VR2001 P.B. EQUALIZER
VR2004 R/P OUTPUT LEVEL
VR2002 REC CURRENT
Q2015 2SC536F
Q2011 2SC536F
Q2014 2SC536F
Q2013 2SB598F
Q2012 2SD438E
Q2016 2SC536F
Q2009 2SC536F
T2001
BIAS CURRENT
TP2001
TP2002
S2004
LINE OUT
GND
GND
FROM VIDEO
GND
REG • B
PLAY • B
REC • B
MUTE
A. DUB

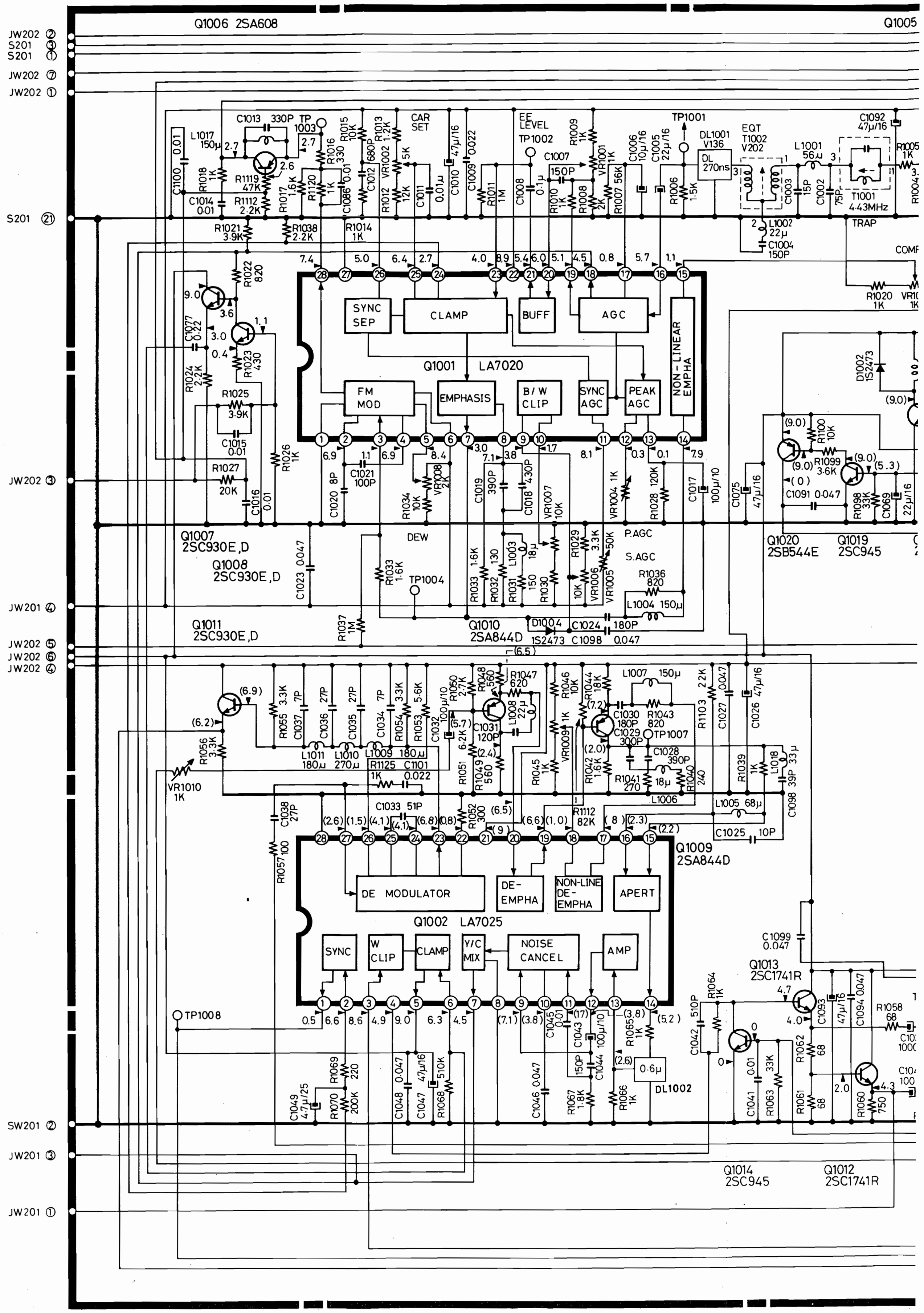
NOTES:

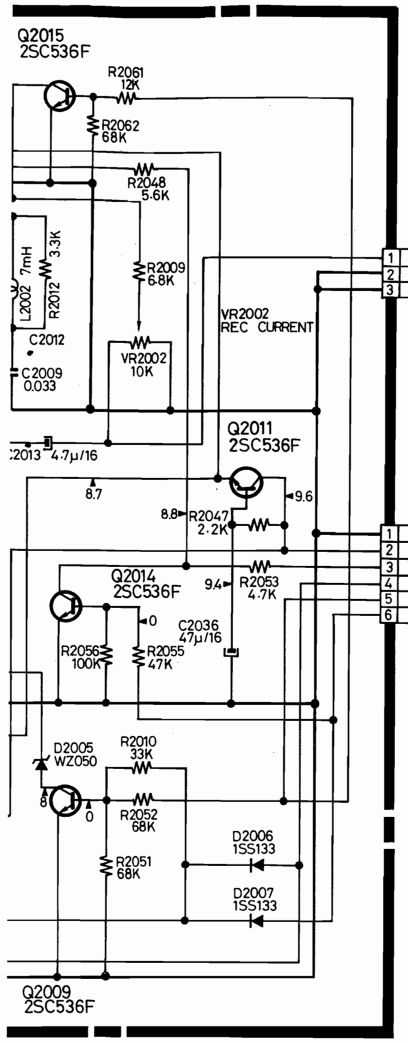
1. All resistance values in "OHMS" unless otherwise noted. (K=1,000 M=1,000,000)
2. All capacitance values in "μfd" unless otherwise noted. p = pico farad
3. All inductance values in "mH" unless otherwise noted. μ= micro henry
4. Marks indicated in each connector indicate the following color of wire.

B : Black V : Violet BR : Brown
R : Red Y : Yellow GR : Green
W : White G : Gray BL : Blue
P : Pink LB : Light Blue OR : Orange

Ⓑ

P.C.B. VD-1 VIDEO


JW202 ②
S201 ③
S201 ①
JW202 ⑦
JW202 ①
S201 ㉑
JW202 ③
JW201 ④
JW202 ⑤
JW202 ⑥
JW202 ④
SW201 ②
JW201 ③
JW201 ①
Q1006 2SA608
Q1005
Q1001 LA7020
SYNC SEP
CLAMP
BUFF
AGC
NON-LINEAR EMPHA
FM MOD
EMPHASIS
B/W CLIP
SYNC AGC
PEAK AGC
Q1007 2SC930E,D
Q1008 2SC930E,D
Q1011 2SC930E,D
Q1010 2SA844D
Q1020 2SB544E
Q1019 2SC945
Q1002 LA7025
DE MODULATOR
DE-EMPHA
NON-LINE DE-EMPHA
APERT
SYNC
W CLIP
CLAMP
Y/C MIX
NOISE CANCEL
AMP
Q1009 2SA844D
Q1013 2SC1741R
Q1014 2SC945
Q1012 2SC1741R
DL1001
DL1002
TP1001
TP1002
TP1004
TP1007
TP1008
VR1010 1K
EE LEVEL
CAR SET
DEW
P.AGC
S.AGC
TRAP
T1001 4.43MHz

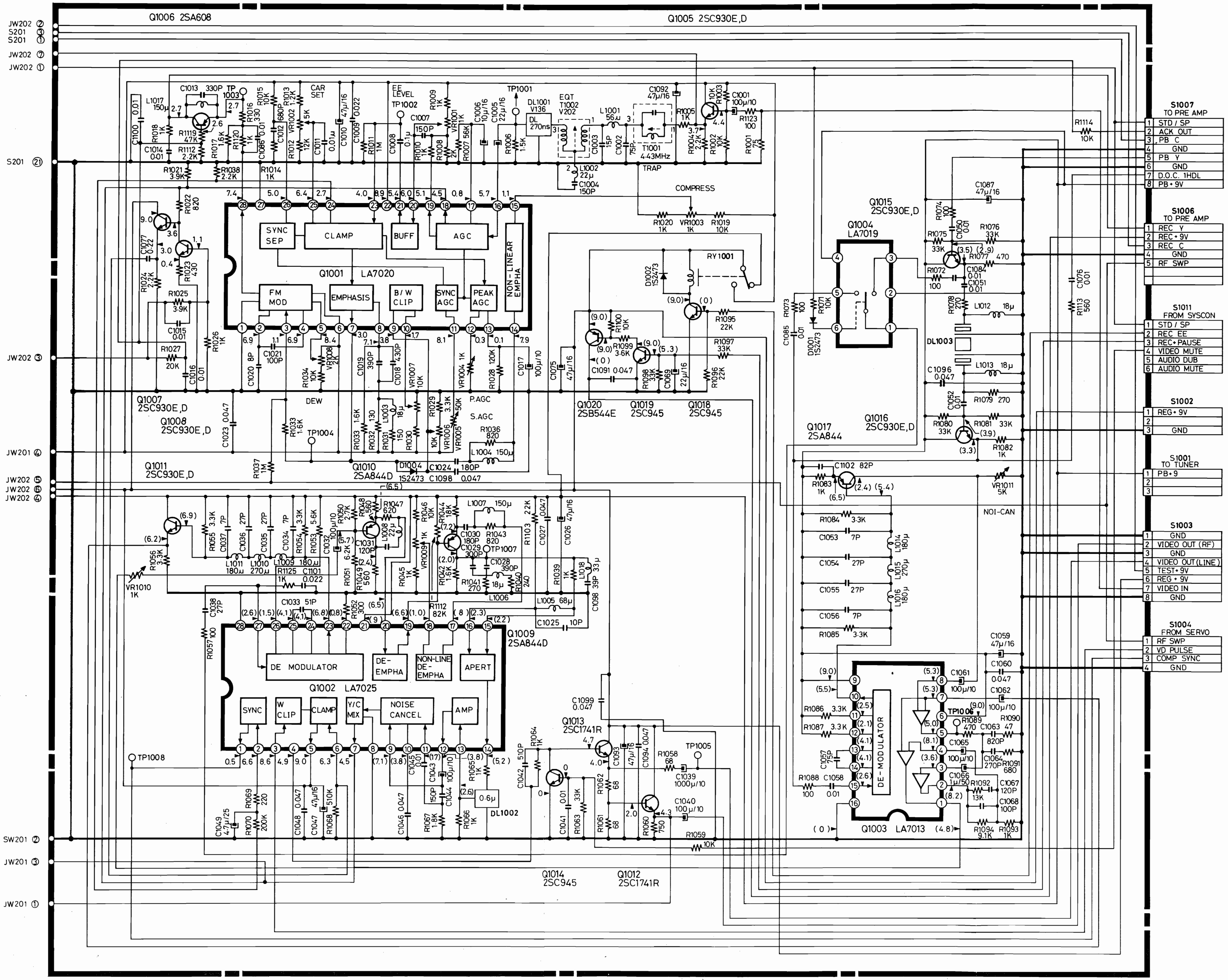

Q2015
2SC536F
R2061 12K
R2062 68K
R2048 5.6K
R2009 6.8K
L2002 7mH
R2012 3.3K
C2012
C2009 0.033
VR2002 REC CURRENT
VR2002 10K
S2004
1 LINE OUT
2 GND
3 GND
C2013 4.7μ/16
Q2011
2SC536F
8.7
R2047 2.2K
9.6
FROM VIDEO
1 GND
2 REG • B
3 PLAY • B
4 REC • B
5 MUTE
6 A. DUB
Q2014
2SC536F
R2053 4.7K
C2036 47μ/16
R2056 100K
R2055 47K
D2005 WZ050
R2010 33K
R2052 68K
R2051 68K
D2006 1SS133
D2007 1SS133
Q2009
2SC536F

=1,000

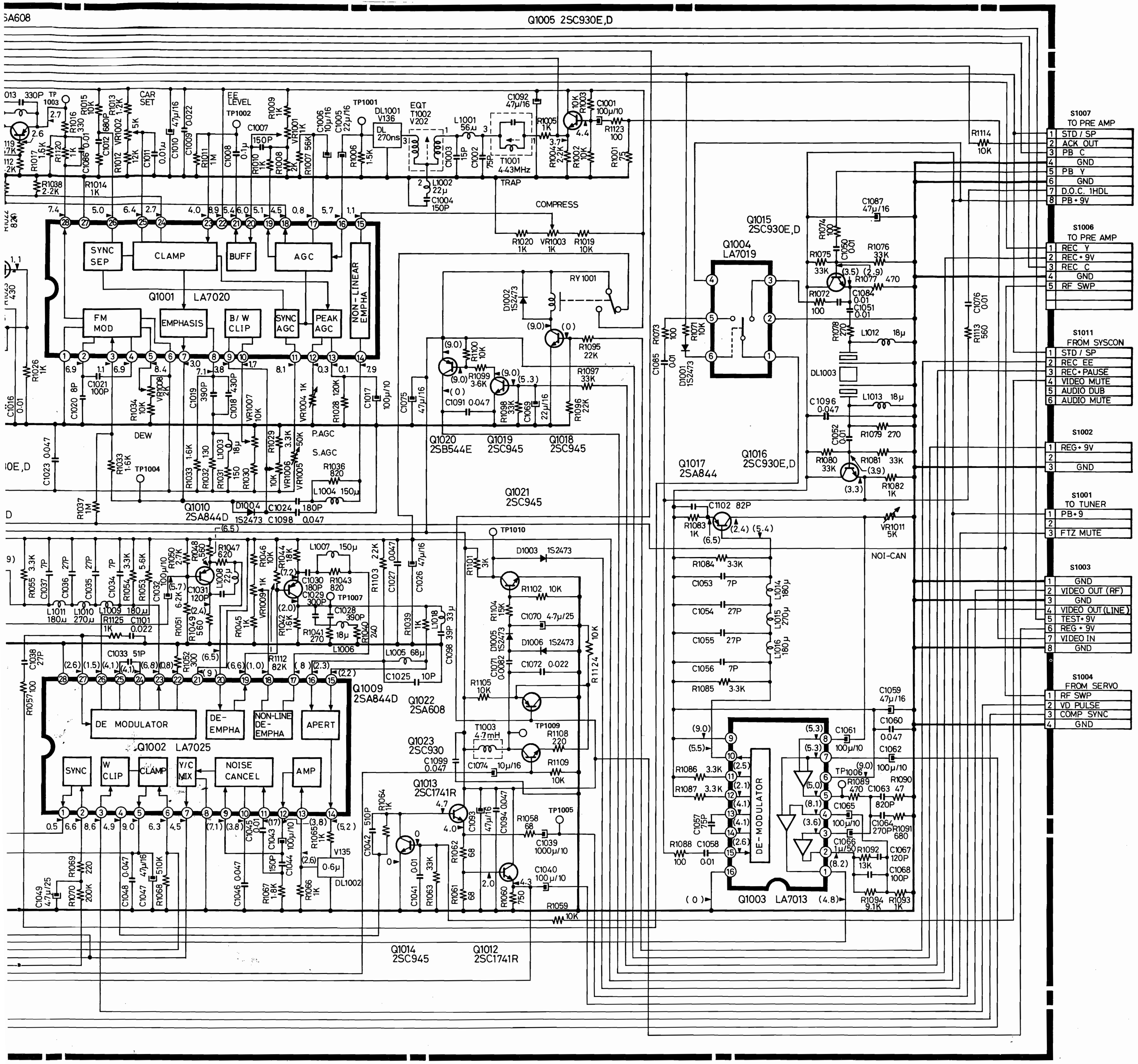
micro

olor of

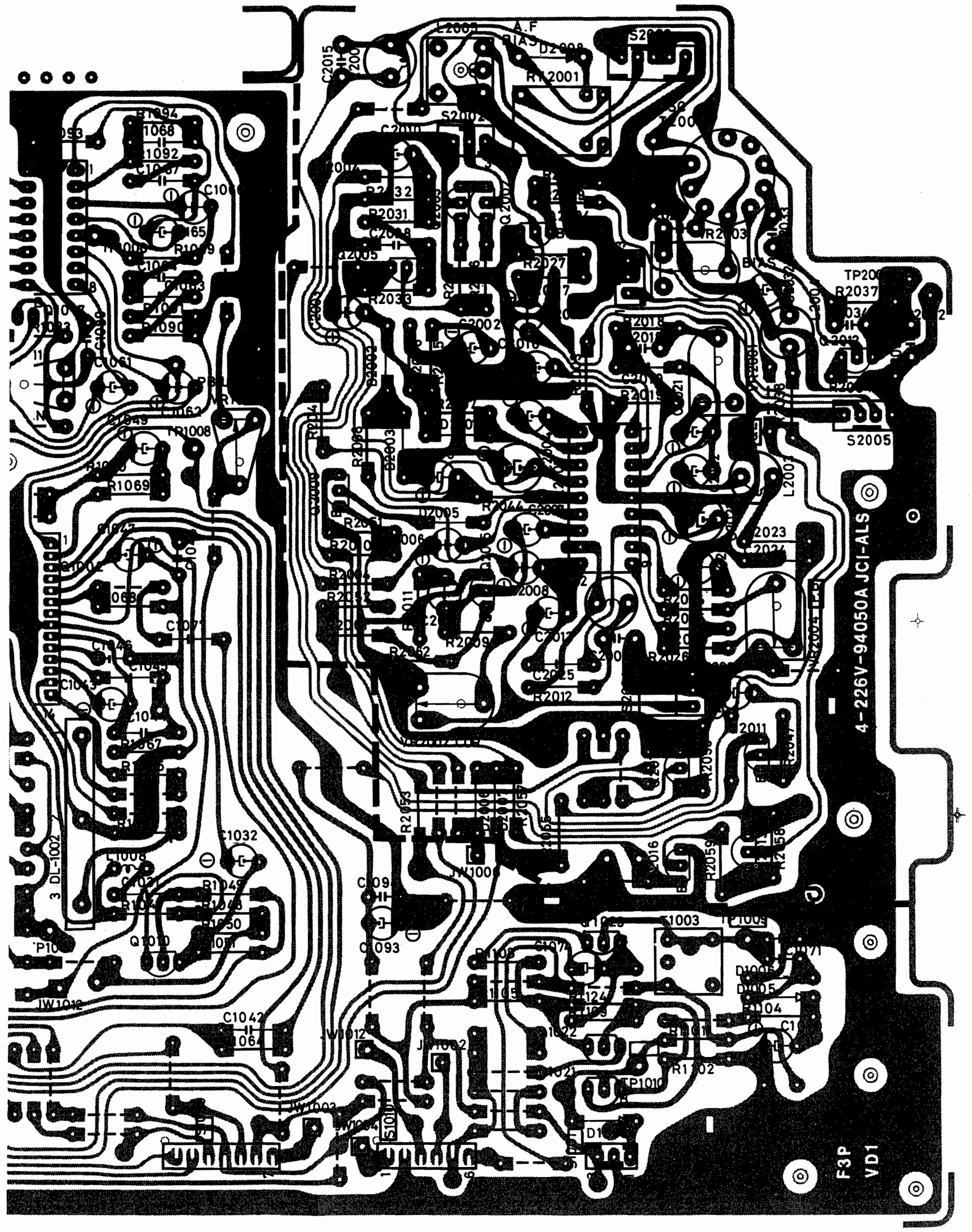
P.C.B. VD-1 VIDEO(I) CIRCUIT


JW202 ②
S201 ③
S201 ①
JW202 ⑦
JW202 ①
S201 ㉑
JW202 ③
JW201 ④
JW202 ⑤
JW202 ⑥
JW202 ④
SW201 ②
JW201 ③
JW201 ①
Q1006 2SA608
Q1005 2SC930E,D
Q1001 LA7020
SYNC SEP
CLAMP
BUFF
AGC
NON-LINEAR EMPHA
FM MOD
EMPHASIS
B/W CLIP
SYNC AGC
PEAK AGC
EE LEVEL
TP1002
TP1001
CAR SET
DL1001 V136
DL 270ns
EQT T1002 V202
L1001 56μ
T1001 4.43MHz
TRAP
COMPRESS
L1002 22μ
C1004 150P
Q1007 2SC930E,D
Q1008 2SC930E,D
Q1011 2SC930E,D
Q1010 2SA844D
D1004 1S2473
DEW
TP1004
P.AGC
S.AGC
L1004 150μ
Q1020 2SB544E
Q1019 2SC945
Q1018 2SC945
RY1001
D1002 1S2473
Q1015 2SC930E,D
Q1004 LA7019
Q1017 2SA844
Q1016 2SC930E,D
DL1003
L1012 18μ
L1013 18μ
Q1002 LA7025
DE MODULATOR
DE-EMPHA
NON-LINE DE-EMPHA
APERT
SYNC
W CLIP
CLAMP
Y/C MIX
NOISE CANCEL
AMP
Q1009 2SA844D
TP1007
L1007 150μ
L1006
L1005 68μ
TP1008
DL1002
0.6μ
VR1010 1K
Q1013 2SC1741R
Q1014 2SC945
Q1012 2SC1741R
TP1005
C1099 0.047
VR1011 5K
NOI-CAN
Q1003 LA7013
DE-MODULATOR
TP1006
S1007
TO PRE AMP
1 STD / SP
2 ACK OUT
3 PB C
4 GND
5 PB Y
6 GND
7 D.O.C. 1HDL
8 PB • 9V
S1006
TO PRE AMP
1 REC Y
2 REC • 9V
3 REC C
4 GND
5 RF SWP
S1011
FROM SYSCON
1 STD / SP
2 REC EE
3 REC • PAUSE
4 VIDEO MUTE
5 AUDIO DUB
6 AUDIO MUTE
S1002
1 REG • 9V
2
3 GND
S1001
TO TUNER
1 PB • 9
2
3
S1003
1 GND
2 VIDEO OUT (RF)
3 GND
4 VIDEO OUT (LINE)
5 TEST • 9V
6 REG • 9V
7 VIDEO IN
8 GND
S1004
FROM SERVO
1 RF SWP
2 VD PULSE
3 COMP SYNC
4 GND

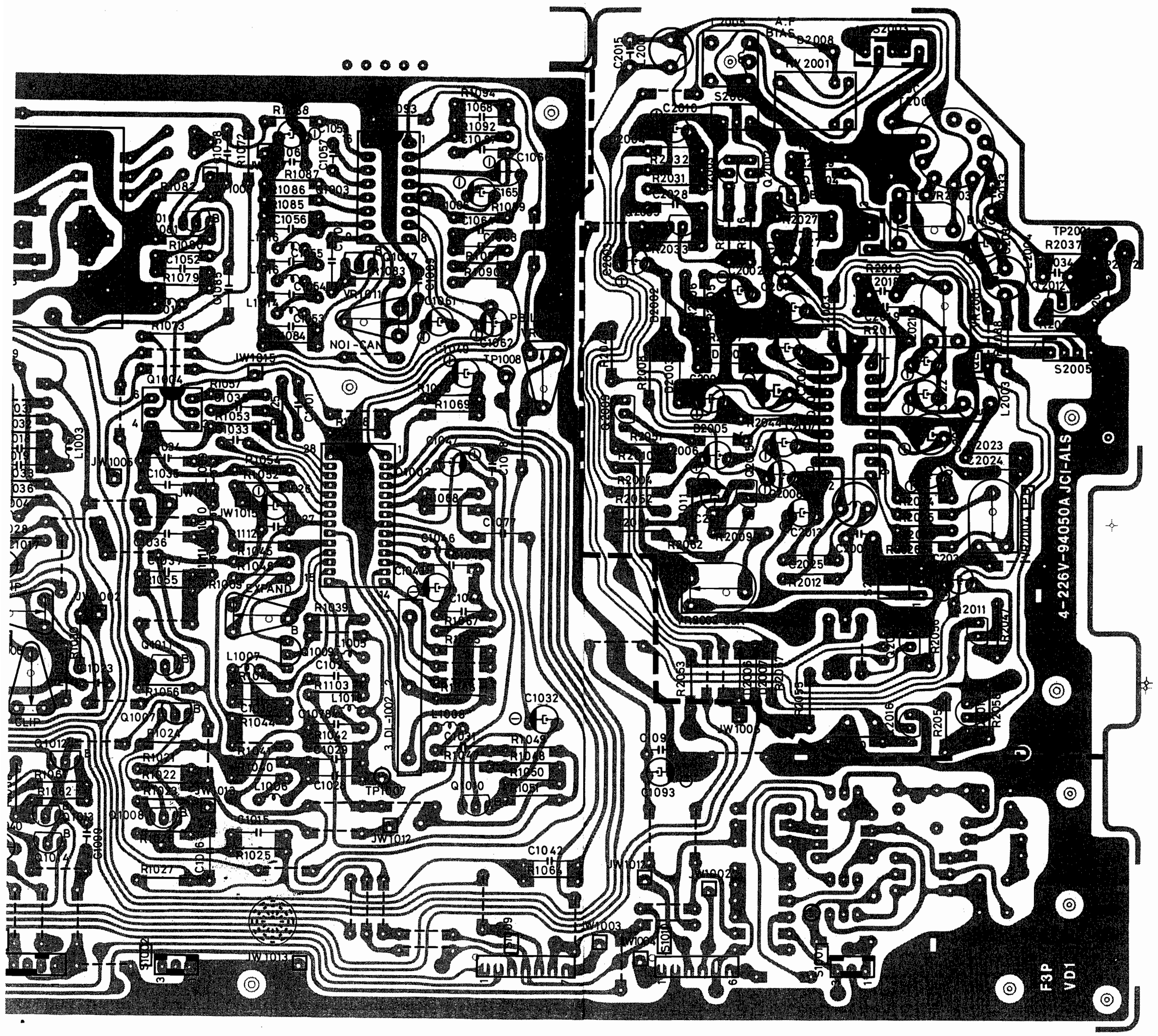
P.C.B. VD-1 VIDEO(I) CIRCUIT (CONTINENT)


Q1005 2SC930E,D
Q1001 LA7020
SYNC SEP
CLAMP
BUFF
AGC
NON-LINEAR EMPHA
FM MOD
EMPHASIS
B/W CLIP
SYNC AGC
PEAK AGC
Q1002 LA7025
DE MODULATOR
DE-EMPHA
NON-LINE DE-EMPHA
APERT
SYNC
W CLIP
CLAMP
Y/C MIX
NOISE CANCEL
AMP
Q1003 LA7013
DE-MODULATOR
Q1004 LA7019
Q1015 2SC930E,D
Q1016 2SC930E,D
Q1017 2SA844
Q1018 2SC945
Q1019 2SC945
Q1020 2SB544E
Q1021 2SC945
Q1009 2SA844D
Q1010 2SA844D
Q1022 2SA608
Q1023 2SC930
Q1013 2SC1741R
Q1014 2SC945
Q1012 2SC1741R
CAR SET
EE LEVEL
EQT T1002 V202
T1001 4.43MHz TRAP
COMPRESS
RY 1001
DL1001 V136 270ns
DL1002
DL1003
NOI-CAN
DEW
P.AGC
S.AGC
S1007 TO PRE AMP
1 STD / SP
2 ACK OUT
3 PB C
4 GND
5 PB Y
6 GND
7 D.O.C. 1HDL
8 PB • 9V
S1006 TO PRE AMP
1 REC Y
2 REC • 9V
3 REC C
4 GND
5 RF SWP
S1011 FROM SYSCON
1 STD / SP
2 REC EE
3 REC • PAUSE
4 VIDEO MUTE
5 AUDIO DUB
6 AUDIO MUTE
S1002
1 REG • 9V
2
3 GND
S1001 TO TUNER
1 PB • 9
2
3 FTZ MUTE
S1003
1 GND
2 VIDEO OUT (RF)
3 GND
4 VIDEO OUT (LINE)
5 TEST • 9V
6 REG • 9V
7 VIDEO IN
8 GND
S1004 FROM SERVO
1 RF SWP
2 VD PULSE
3 COMP SYNC
4 GND

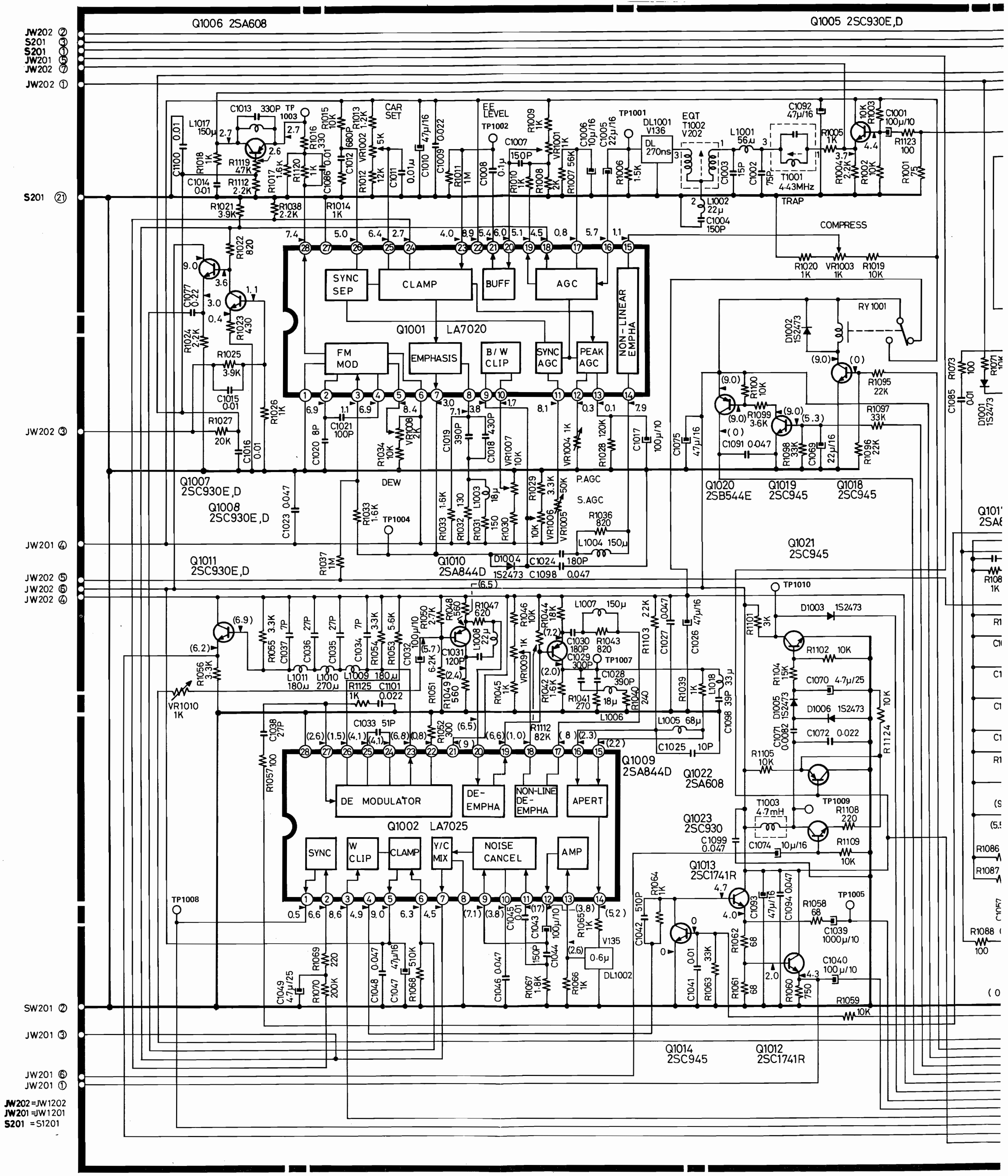
P.C.B. VD-1 VIDEO(I)/AUDIO (CONTINENT)


4-226V-94050A JCI-ALS
F3P VD1
S2005
S1003
TP2001
©

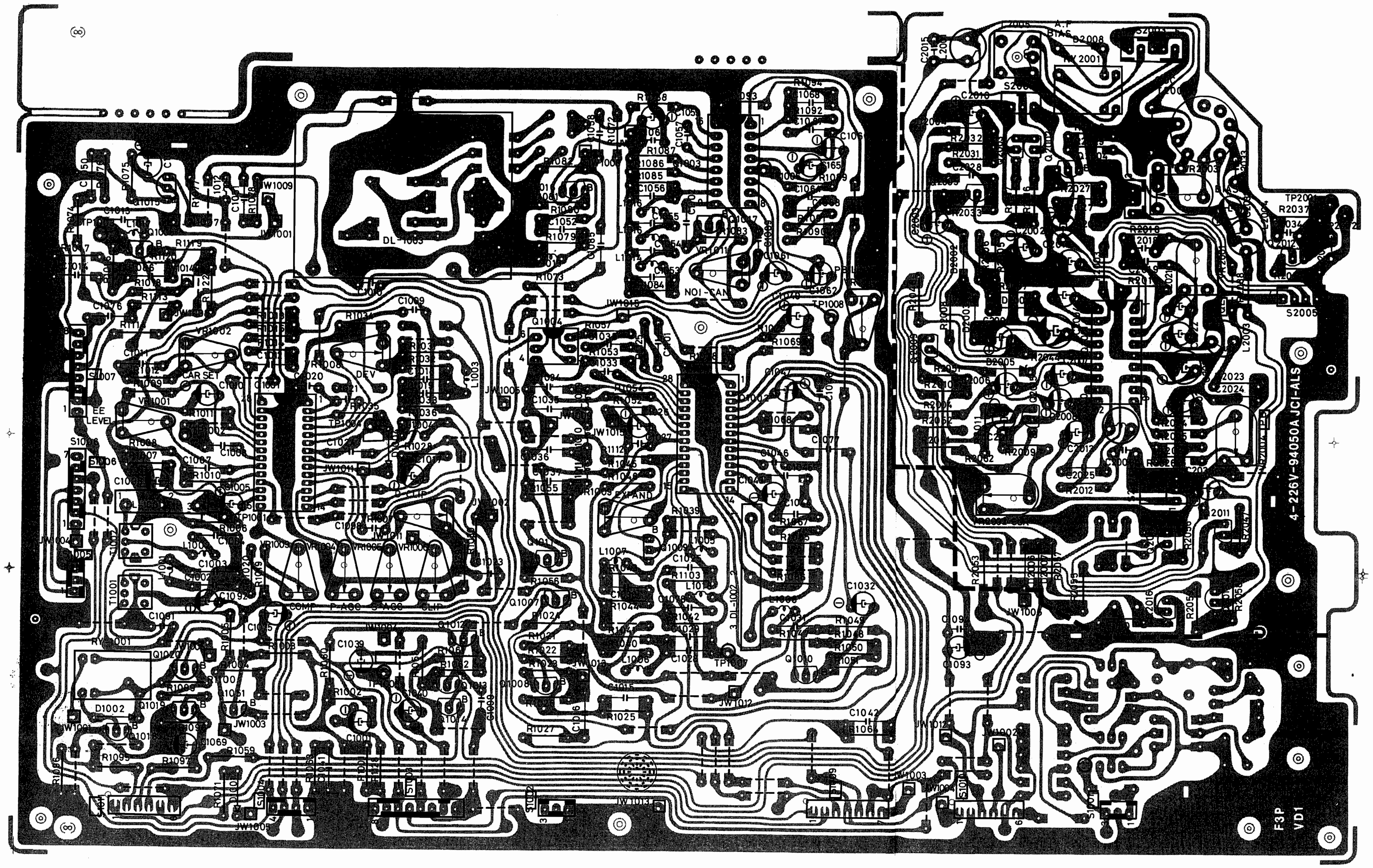
P.C.B. VD-1 VIDEO(I)/AUDIO

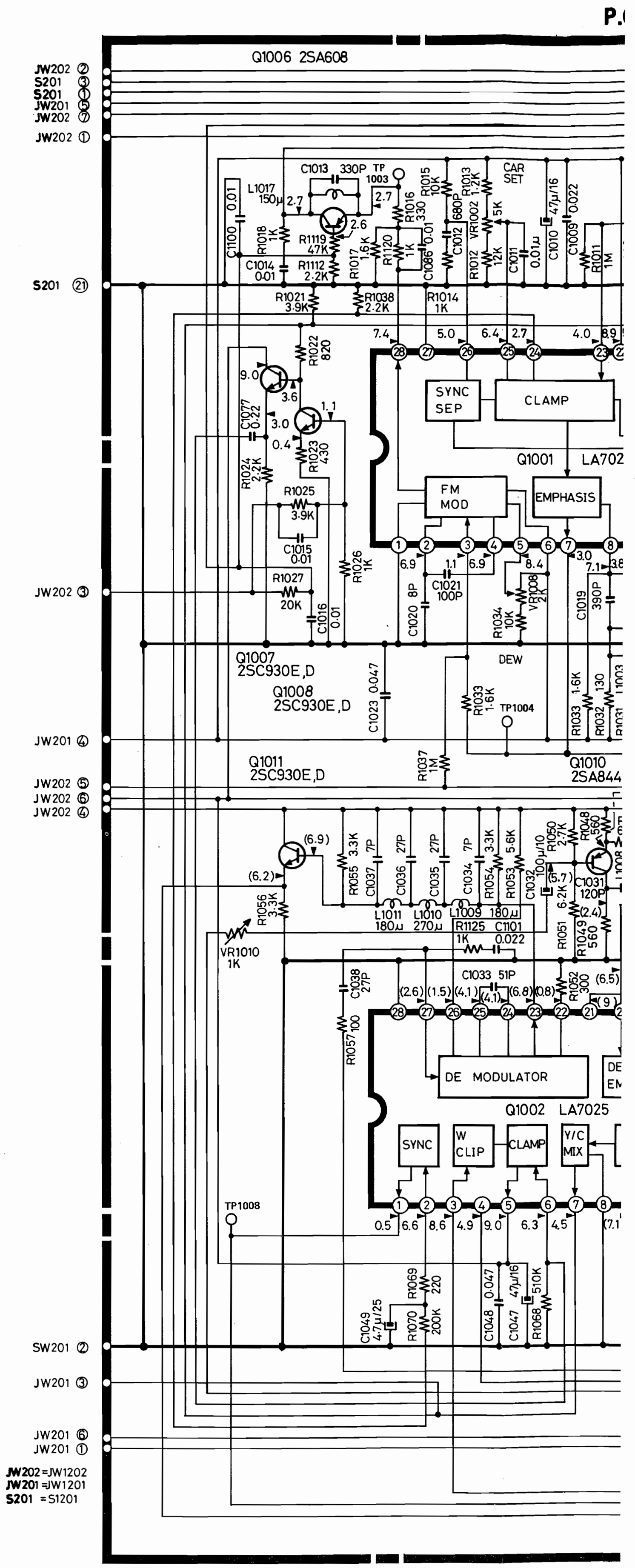

A.F BIAS
NOI-CAN
EXPAND
CLIP
PB
TP2001
S2005
4-226V-94050A JCI-ALS
F3P
VD1

P.C.B. VD-1 VIDEO(I) CIRCUIT (CONTINENT)

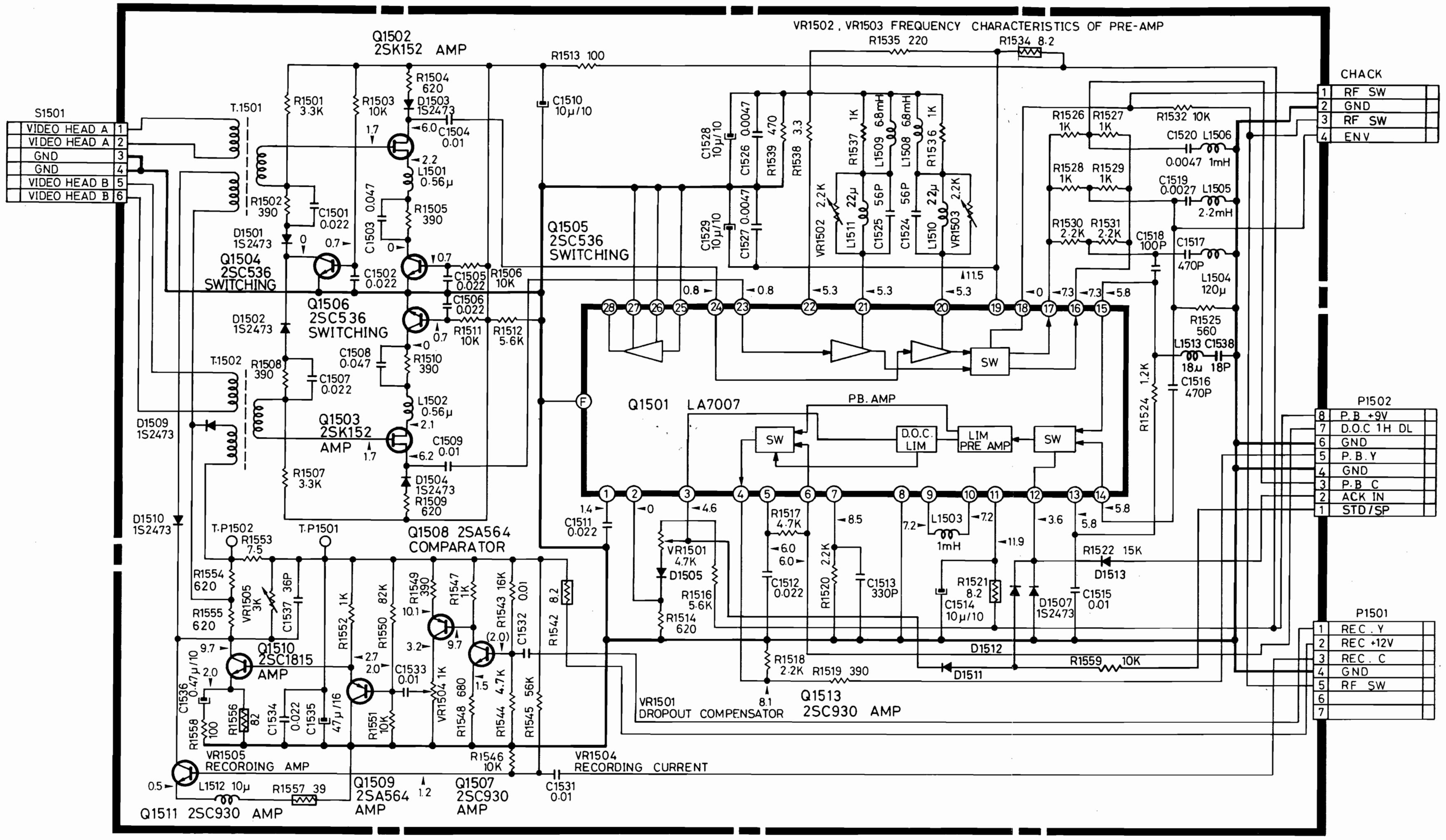

Q1006 2SA608
Q1005 2SC930E,D
JW202 ②
S201 ③
S201 ①
JW201 ⑤
JW202 ⑦
JW202 ①
S201 ㉑
JW202 ③
JW201 ④
JW202 ⑤
JW202 ⑥
JW202 ④
SW201 ②
JW201 ③
JW201 ⑥
JW201 ①
JW202=JW1202
JW201=JW1201
S201 =S1201
SYNC SEP
CLAMP
BUFF
AGC
NON-LINEAR EMPHA
FM MOD
EMPHASIS
B/W CLIP
SYNC AGC
PEAK AGC
Q1001 LA7020
CAR SET
FE LEVEL
TP1001
TP1002
DL1001 V136
DL 270ns
EQT T1002 V202
T1001 4.43MHz
TRAP
COMPRESS
RY1001
Q1007 2SC930E,D
Q1008 2SC930E,D
Q1011 2SC930E,D
Q1010 2SA844D
DEW
P.AGC
S.AGC
TP1004
Q1020 2SB544E
Q1019 2SC945
Q1018 2SC945
Q1021 2SC945
TP1010
DE MODULATOR
DE-EMPHA
NON-LINE DE-EMPHA
APERT
Q1002 LA7025
SYNC
W CLIP
CLAMP
Y/C MIX
NOISE CANCEL
AMP
Q1009 2SA844D
Q1022 2SA608
Q1023 2SC930
Q1013 2SC1741R
TP1007
TP1008
TP1009
TP1005
DL1002
Q1014 2SC945
Q1012 2SC1741R
VR1010 1K

P.C.B. VD-1 VIDEO(I)/AUDIO


4-226V-94050A JCI-ALS
F3P
VD1
DL-1003
NOI-CAN
CAR SET
EE LEVEL
COMP
P-AGC
S-AGC
CLIP
DEV
EXPAND
A-F BIAS


P.
JW202 ②
S201 ③
S201 ①
JW201 ⑤
JW202 ⑦
JW202 ①
Q1006 2SA608
S201 ㉑
SYNC SEP
CLAMP
FM MOD
EMPHASIS
Q1001 LA702
DEW
TP1004
JW202 ③
Q1007 2SC930E,D
Q1008 2SC930E,D
JW201 ④
Q1011 2SC930E,D
Q1010 2SA844
JW202 ⑤
JW202 ⑥
JW202 ⑥
VR1010 1K
DE MODULATOR
Q1002 LA7025
SYNC
W CLIP
CLAMP
Y/C MIX
TP1008
SW201 ②
JW201 ③
JW201 ⑥
JW201 ①
JW202=JW1202
JW201=JW1201
S201 =S1201

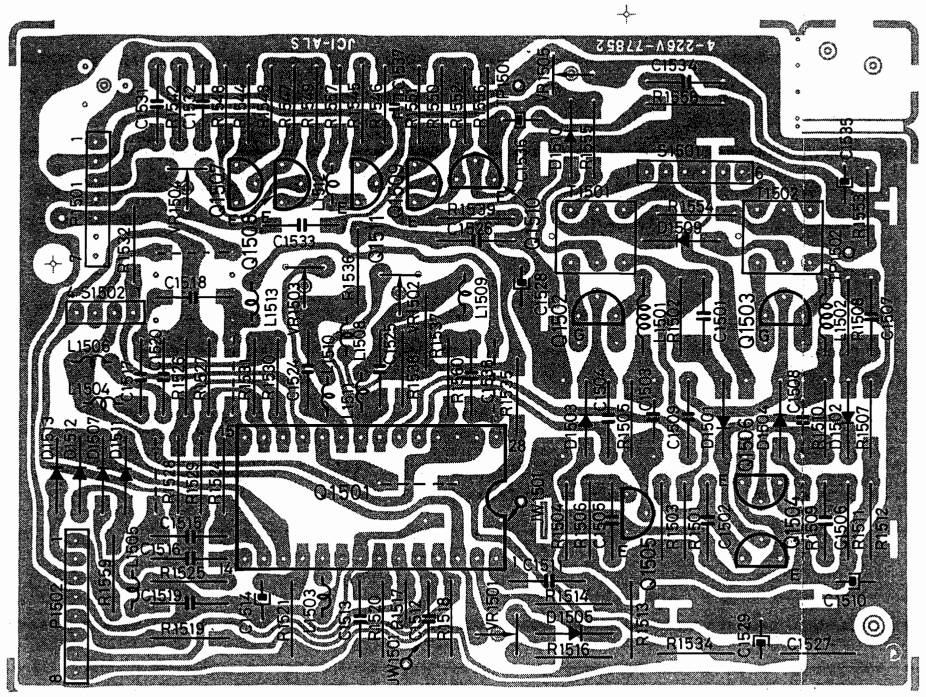
P.C.B. VP-1 VIDEO PRE-AMP CIRCUIT



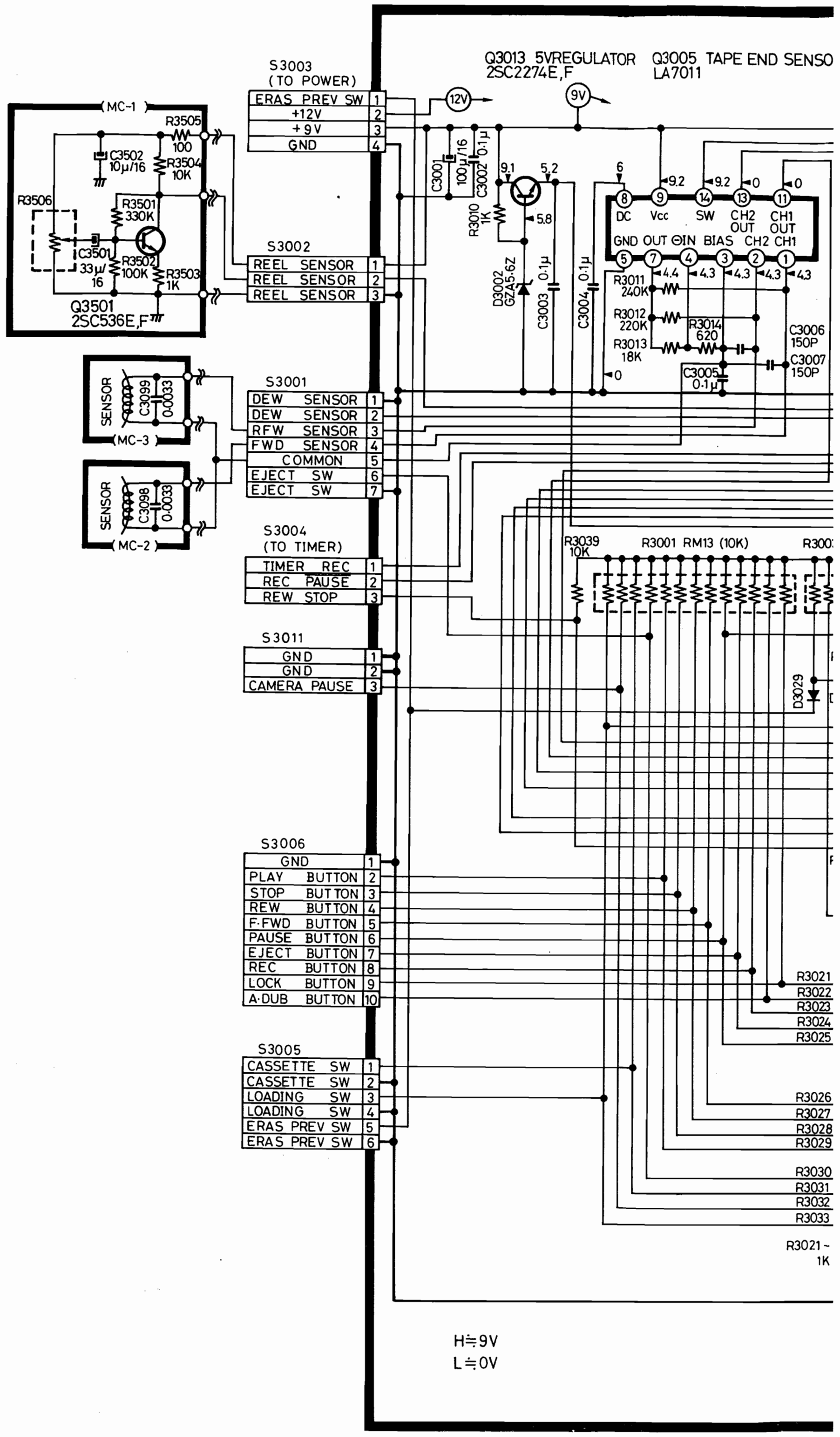
VR1502, VR1503 FREQUENCY CHARACTERISTICS OF PRE-AMP
S1501
VIDEO HEAD A 1
VIDEO HEAD A 2
GND 3
GND 4
VIDEO HEAD B 5
VIDEO HEAD B 6
T.1501
T.1502
Q1502 2SK152 AMP
Q1503 2SK152 AMP
Q1504 2SC536 SWITCHING
Q1505 2SC536 SWITCHING
Q1506 2SC536 SWITCHING
Q1501 LA7007
Q1508 2SA564 COMPARATOR
Q1509 2SA564 AMP
Q1507 2SC930 AMP
Q1510 2SC1815 AMP
Q1511 2SC930 AMP
Q1513 2SC930 AMP
VR1501 DROPOUT COMPENSATOR
VR1504 RECORDING CURRENT
VR1505 RECORDING AMP
PB. AMP
SW
D.O.C. LIM
LIM PRE AMP
T-P1502
T.P1501
CHACK
1 RF SW
2 GND
3 RF SW
4 ENV
P1502
8 P.B +9V
7 D.O.C 1H DL
6 GND
5 P.B.Y
4 GND
3 P.B C
2 ACK IN
1 STD/SP
P1501
1 REC. Y
2 REC +12V
3 REC. C
4 GND
5 RF SW
6
7
R1513 100
R1535 220
R1534 8.2
C1510 10μ/10
R1504 620
D1503 1S2473
C1504 0.01
L1501 0.56μ
R1505 390
R1501 3.3K
R1503 10K
R1502 390
C1501 0.022
D1501 1S2473
C1502 0.022
D1502 1S2473
R1508 390
C1507 0.022
C1508 0.047
R1510 390
L1502 0.56μ
C1509 0.01
D1504 1S2473
R1509 620
R1507 3.3K
D1509 1S2473
D1510 1S2473
C1505 0.022
C1506 0.022
R1506 10K
R1511 10K
R1512 5.6K
C1511 0.022
C1528 10μ/10
C1526 0.0047
C1529 10μ/10
C1527 0.0047
R1539 470
R1538 3.3
VR1502 2.2K
R1537 1K
L1511 22μ
L1509 68mH
C1525 56P
C1524 56P
L1508 68mH
L1510 22μ
R1536 1K
VR1503 2.2K
R1526 1K
R1527 1K
R1532 10K
C1520 0.0047
L1506 1mH
R1528 1K
R1529 1K
C1519 0.0027
L1505 2.2mH
R1530 2.2K
R1531 2.2K
C1518 100P
C1517 470P
L1504 120μ
R1525 560
L1513 18μ
C1538 18P
C1516 470P
R1524 1.2K
R1522 15K
D1513
R1517 4.7K
C1512 0.022
R1520 2.2K
C1513 330P
L1503 1mH
R1521 8.2
C1514 10μ/10
D1507 1S2473
C1515 0.01
VR1501 4.7K
D1505
R1516 5.6K
R1514 620
R1518 2.2K
R1519 390
D1512
D1511
R1559 10K
R1553 7.5
R1554 620
R1555 620
VR1505 3K
C1537 36P
R1552 1K
R1550 82K
R1549 390
R1547 1K
R1543 16K
C1532 0.01
R1542 8.2
C1533 0.01
R1504 1K
R1548 680
R1544 4.7K
R1545 56K
R1546 10K
C1536 0.47μ/10
R1558 100
R1556 82
C1534 0.022
C1535 47μ/16
R1551 10K
L1512 10μ
R1557 39
C1531 0.01

Ⓓ

P.C.B. VP-1 VIDEO PRE-AMP

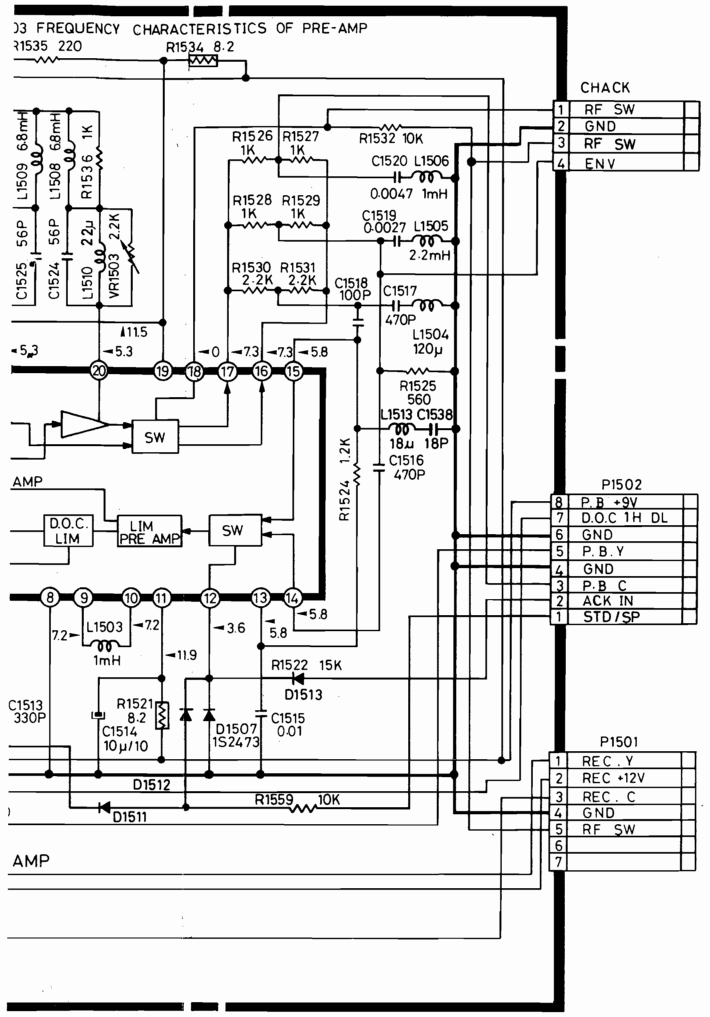


4-226V-77852
JCI-ALS
Q1501
Q1502
Q1503
Q1505
Q1506
Q1507
S1502
S1501



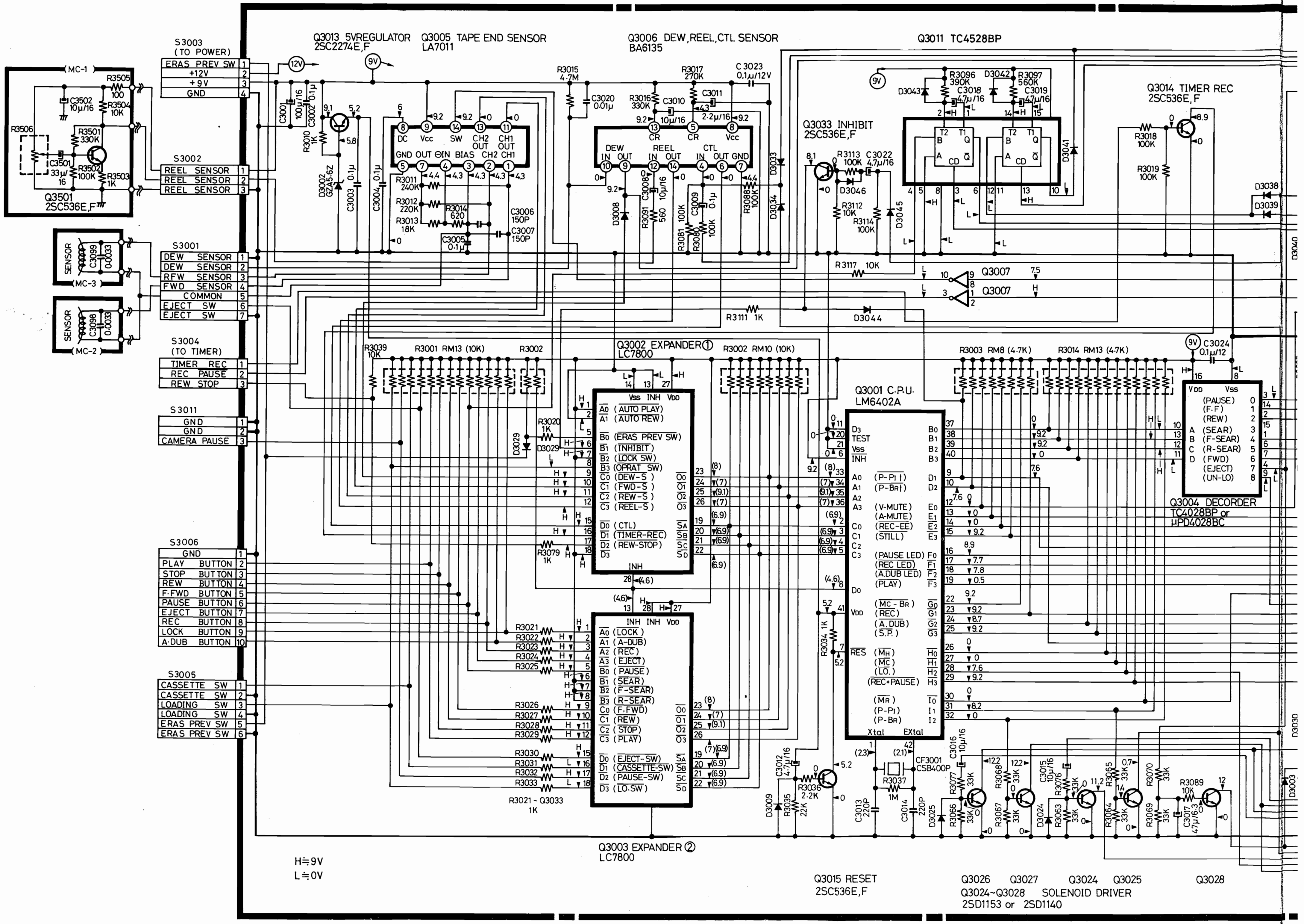
Q3013 5VREGULATOR 2SC2274E,F
Q3005 TAPE END SENSO LA7011
S3003 (TO POWER)
ERAS PREV SW 1
+12V 2
+9V 3
GND 4
(MC-1)
R3505 100
C3502 10μ/16
R3504 10K
R3506
R3501 330K
C3501 33μ/16
R3502 100K
R3503 1K
Q3501 2SC536E,F
S3002
REEL SENSOR 1
REEL SENSOR 2
REEL SENSOR 3
SENSOR
(MC-3)
(MC-2)
C3099 0.0033
C3098 0.0033
S3001
DEW SENSOR 1
DEW SENSOR 2
REW SENSOR 3
FWD SENSOR 4
COMMON 5
EJECT SW 6
EJECT SW 7
S3004 (TO TIMER)
TIMER REC 1
REC PAUSE 2
REW STOP 3
S3011
GND 1
GND 2
CAMERA PAUSE 3
S3006
GND 1
PLAY BUTTON 2
STOP BUTTON 3
REW BUTTON 4
F.FWD BUTTON 5
PAUSE BUTTON 6
EJECT BUTTON 7
REC BUTTON 8
LOCK BUTTON 9
A.DUB BUTTON 10
S3005
CASSETTE SW 1
CASSETTE SW 2
LOADING SW 3
LOADING SW 4
ERAS PREV SW 5
ERAS PREV SW 6
12V
9V
C3001 100μ/16
C3002 0.1μ
R3010 1K
D3002 GZA5.6Z
C3003 0.1μ
C3004 0.1μ
R3011 240K
R3012 220K
R3013 18K
R3014 620
C3005 0.1μ
C3006 150P
C3007 150P
DC Vcc SW CH2 OUT CH1 OUT
GND OUT ⊖IN BIAS CH2 CH1
R3039 10K
R3001 RM13 (10K)
R3021
R3022
R3023
R3024
R3025
R3026
R3027
R3028
R3029
R3030
R3031
R3032
R3033
R3021 - 1K
D3029
H≒9V
L≒0V

RCUIT



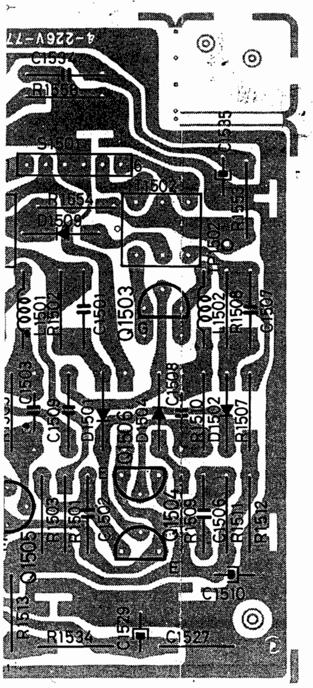
D3 FREQUENCY CHARACTERISTICS OF PRE-AMP
R1535 220
R1534 8.2
CHACK
RF SW
GND
RF SW
ENV
R1526 1K
R1527 1K
R1532 10K
C1520 L1506 0.0047 1mH
R1528 1K
R1529 1K
C1519 0.0027
L1505 2.2mH
R1530 2.2K
R1531 2.2K
C1518 100P
C1517 470P
L1504 120μ
R1525 560
L1513 18μ
C1538 18P
C1516 470P
R1524 1.2K
SW
AMP
D.O.C. LIM
LIM PRE AMP
SW
P1502
P.B +9V
D.O.C 1H DL
GND
P.B Y
GND
P.B C
ACK IN
STD/SP
L1503 1mH
R1522 15K
D1513
C1513 330P
R1521 8.2
C1514 10μ/10
D1507 1S2473
C1515 0.01
D1512
D1511
R1559 10K
P1501
REC. Y
REC +12V
REC. C
GND
RF SW
AMP

P.C.B. VD-2 SYSTEM CONTR

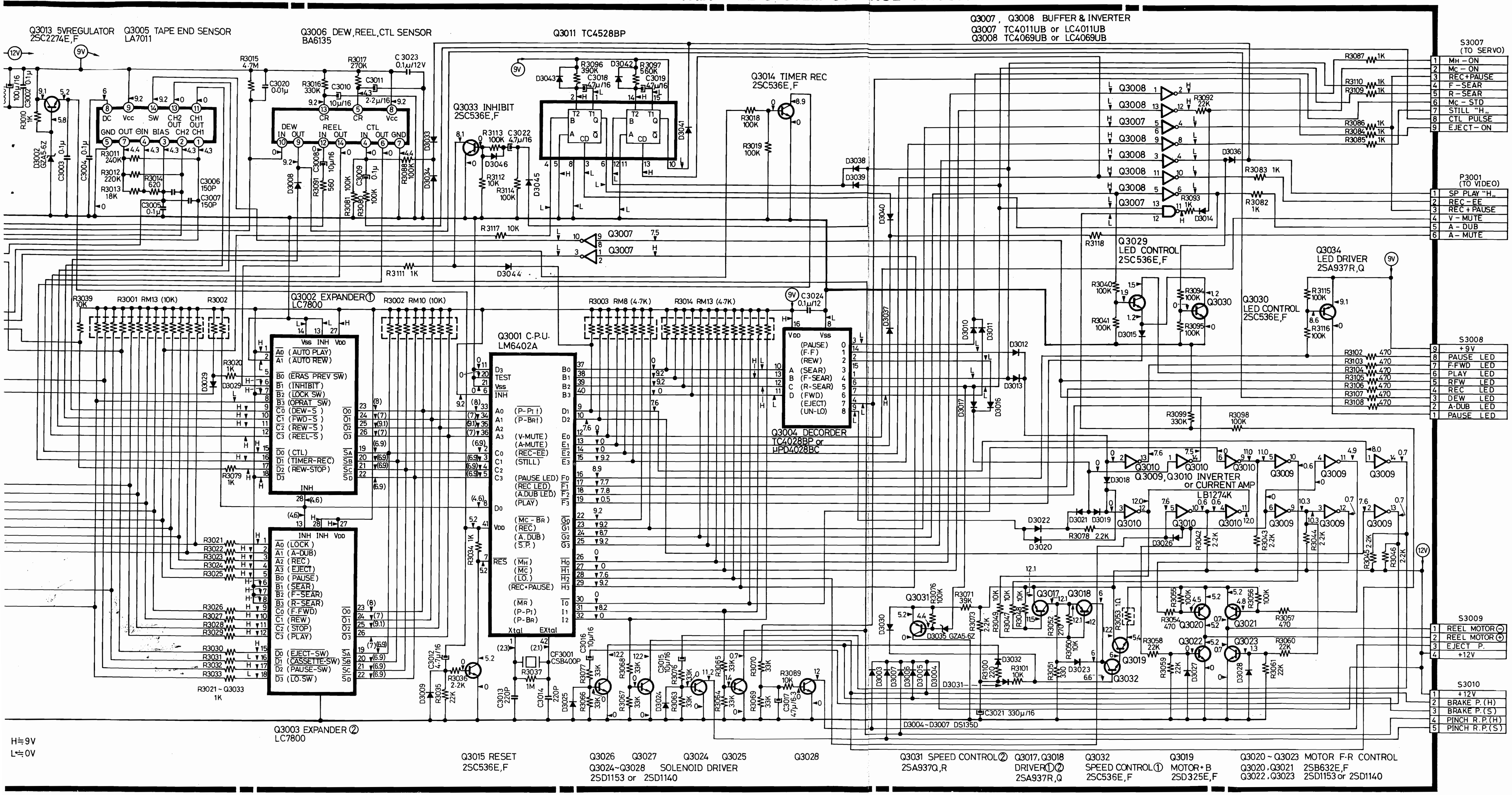


S3003 (TO POWER)
ERAS PREV SW
+12V
+9V
GND
MC-1
R3505 100
C3502 10μ/16
R3504 10K
R3506
R3501 330K
C3501 33μ/16
R3502 100K
R3503 1K
Q3501 2SC536E,F
S3002
REEL SENSOR
REEL SENSOR
REEL SENSOR
S3001
DEW SENSOR
DEW SENSOR
REW SENSOR
FWD SENSOR
COMMON
EJECT SW
EJECT SW
SENSOR
MC-3
MC-2
S3004 (TO TIMER)
TIMER REC
REC PAUSE
REW STOP
S3011
GND
GND
CAMERA PAUSE
S3006
GND
PLAY BUTTON
STOP BUTTON
REW BUTTON
F.FWD BUTTON
PAUSE BUTTON
EJECT BUTTON
REC BUTTON
LOCK BUTTON
A.DUB BUTTON
S3005
CASSETTE SW
CASSETTE SW
LOADING SW
LOADING SW
ERAS PREV SW
ERAS PREV SW
Q3013 5VREGULATOR 2SC2274E,F
Q3005 TAPE END SENSOR LA7011
Q3006 DEW,REEL,CTL SENSOR BA6135
Q3011 TC4528BP
Q3014 TIMER REC 2SC536E,F
Q3033 INHIBIT 2SC536E,F
Q3007
Q3002 EXPANDER① LC7800
Q3001 C.P.U. LM6402A
Q3004 DECORDER TC4028BP or μPD4028BC
R3001 RM13 (10K)
R3002 RM10 (10K)
R3003 RM8 (4.7K)
R3014 RM13 (4.7K)
(AUTO PLAY)
(AUTO REW)
(ERAS PREV SW)
(INHIBIT)
(LOCK SW)
(OPRAT SW)
(DEW-S)
(FWD-S)
(REW-S)
(REEL-S)
(CTL)
(TIMER-REC)
(REW-STOP)
(LOCK)
(A-DUB)
(REC)
(EJECT)
(PAUSE)
(SEAR)
(F-SEAR)
(R-SEAR)
(F.FWD)
(REW)
(STOP)
(PLAY)
(EJECT-SW)
(CASSETTE-SW)
(PAUSE-SW)
(LO-SW)
(P-PI)
(P-BR)
(V-MUTE)
(A-MUTE)
(REC-EE)
(STILL)
(PAUSE LED)
(REC LED)
(A.DUB LED)
(PLAY)
(MC-BR)
(REC)
(A.DUB)
(S.P.)
(MH)
(MC)
(LO)
(REC•PAUSE)
(MR)
(P-PI)
(P-BR)
(F-F)
(REW)
(SEAR)
(F-SEAR)
(R-SEAR)
(FWD)
(EJECT)
(UN-LO)
CF3001 CSB400P
R3021~Q3033 1K
Q3003 EXPANDER② LC7800
H≒9V
L≒0V
Q3015 RESET 2SC536E,F
Q3026
Q3027
Q3024
Q3025
Q3028
Q3024~Q3028 SOLENOID DRIVER 2SD1153 or 2SD1140

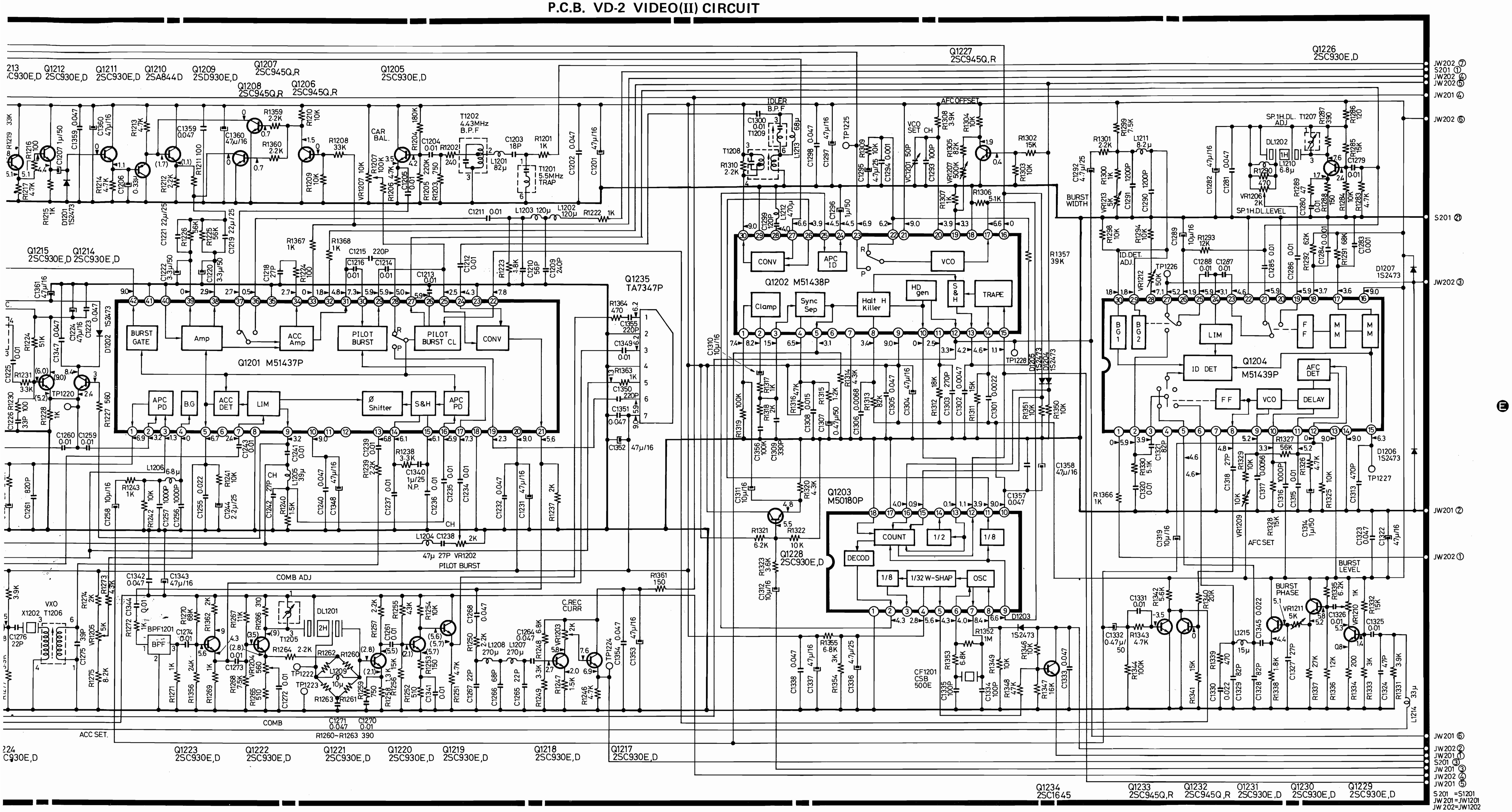
AMP



P.C.B. VD-2 SYSTEM CONTROL CIRCUIT

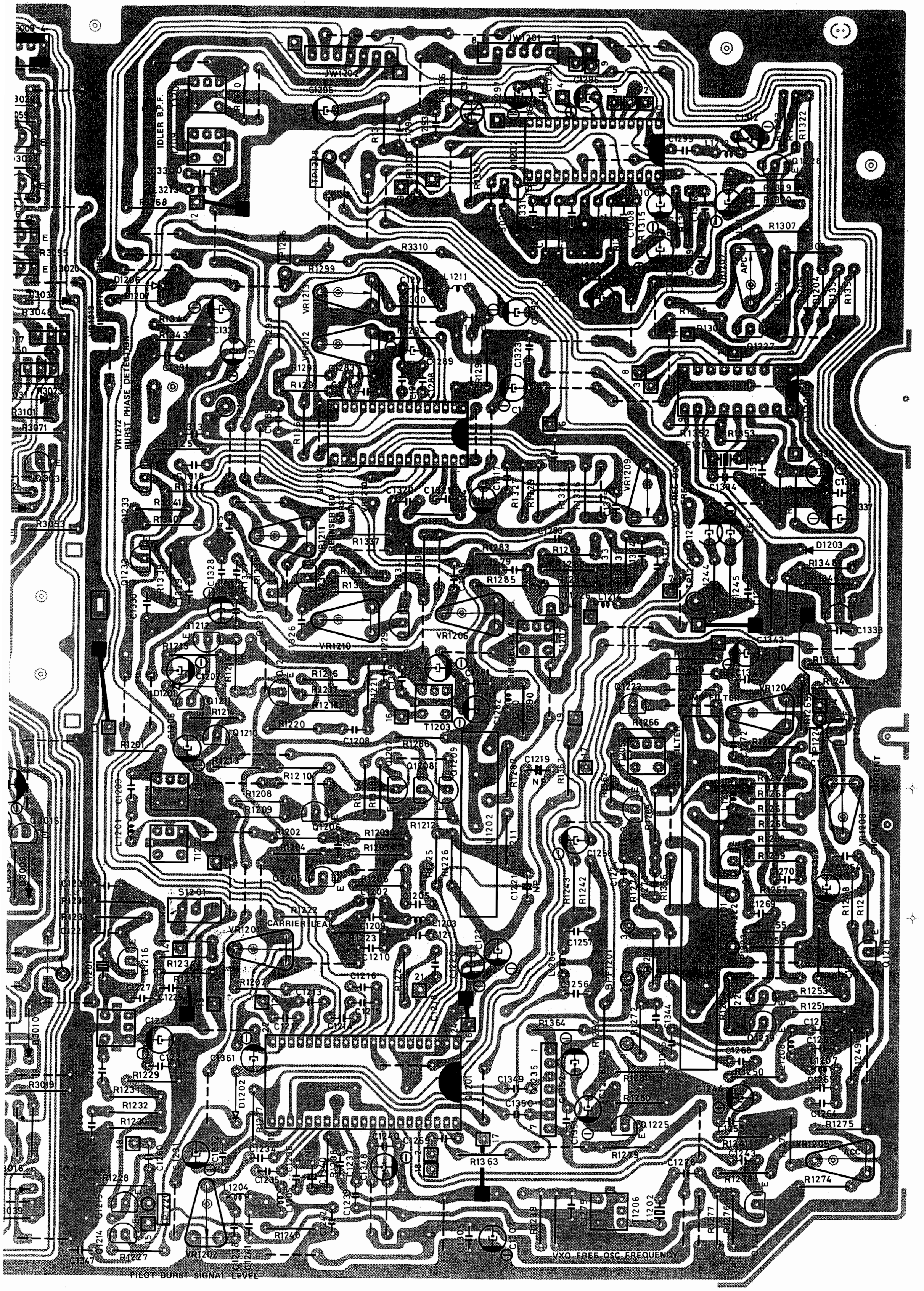

Q3013 5VREGULATOR 2SC2274E,F
Q3005 TAPE END SENSOR LA7011
Q3006 DEW,REEL,CTL SENSOR BA6135
Q3011 TC4528BP
Q3007, Q3008 BUFFER & INVERTER
Q3007 TC4011UB or LC4011UB
Q3008 TC4069UB or LC4069UB
Q3033 INHIBIT 2SC536E,F
Q3014 TIMER REC 2SC536E,F
S3007 (TO SERVO)
1 MH – ON
2 MC – ON
3 REC+PAUSE
4 F – SEAR
5 R – SEAR
6 MC – STD
7 STILL "H"
8 CTL PULSE
9 EJECT – ON
P3001 (TO VIDEO)
1 SP PLAY "H"
2 REC – EE
3 REC + PAUSE
4 V – MUTE
5 A – DUB
6 A – MUTE
Q3029 LED CONTROL 2SC536E,F
Q3030 LED CONTROL 2SC536E,F
Q3034 LED DRIVER 2SA937R,Q
S3008
9 +9V
8 PAUSE LED
7 F.FWD LED
6 PLAY LED
5 RFW LED
4 REC LED
3 DEW LED
2 A-DUB LED
1 PAUSE LED
Q3002 EXPANDER① LC7800
Q3001 C.P.U. LM6402A
Q3004 DECORDER TC4028BP or μPD4028BC
Q3009,Q3010 INVERTER or CURRENT AMP LB1274K
Q3003 EXPANDER② LC7800
R3021~R3033 1K
S3009
1 REEL MOTOR⊖
2 REEL MOTOR⊕
3 EJECT P.
4 +12V
S3010
1 +12V
2 BRAKE P.(H)
3 BRAKE P.(S)
4 PINCH R.P.(H)
5 PINCH R.P.(S)
D3004~D3007 DS135D
H≒9V
L≒0V
Q3015 RESET 2SC536E,F
Q3026 Q3027 Q3024 Q3025 Q3028
Q3024~Q3028 SOLENOID DRIVER 2SD1153 or 2SD1140
Q3031 SPEED CONTROL② 2SA937Q,R
Q3017,Q3018 DRIVER①② 2SA937R,Q
Q3032 SPEED CONTROL① 2SC536E,F
Q3019 MOTOR+B 2SD325E,F
Q3020~Q3023 MOTOR F-R CONTROL
Q3020,Q3021 2SB632E,F
Q3022,Q3023 2SD1153 or 2SD1140

P.C.B. VD-2 VIDEO(II) CIRCUIT

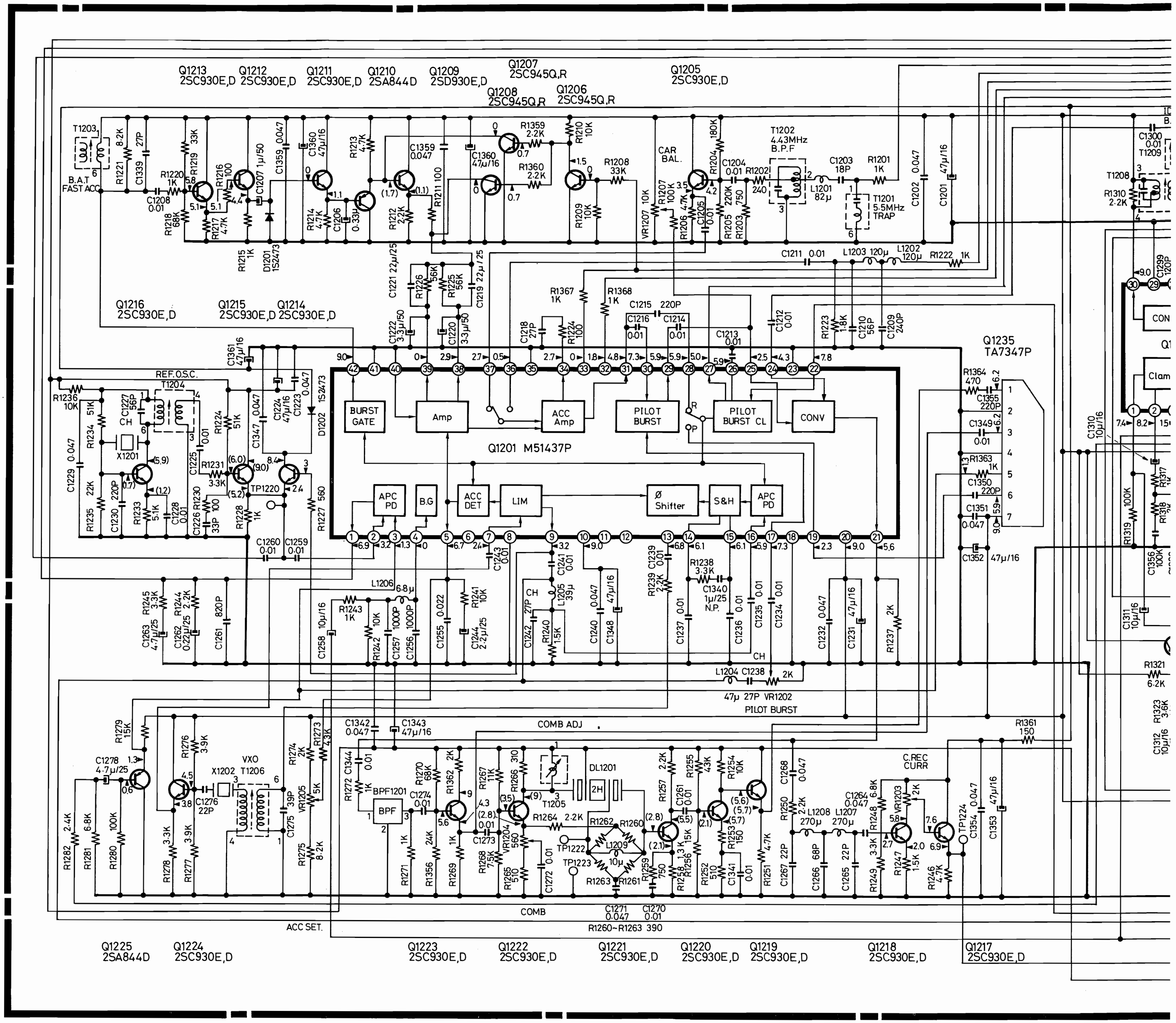

Q1213 2SC930E,D
Q1212 2SC930E,D
Q1211 2SC930E,D
Q1210 2SA844D
Q1209 2SD930E,D
Q1207 2SC945Q,R
Q1208 2SC945Q,R
Q1206 2SC945Q,R
Q1205 2SC930E,D
Q1227 2SC945Q,R
Q1226 2SC930E,D
Q1215 2SC930E,D
Q1214 2SC930E,D
Q1201 M51437P
Q1235 TA7347P
Q1202 M51438P
Q1203 M50180P
Q1204 M51439P
Q1228 2SC930E,D
Q1223 2SC930E,D
Q1222 2SC930E,D
Q1221 2SC930E,D
Q1220 2SC930E,D
Q1219 2SC930E,D
Q1218 2SC930E,D
Q1217 2SC930E,D
Q1234 2SC1645
Q1233 2SC945Q,R
Q1232 2SC945Q,R
Q1231 2SC930E,D
Q1230 2SC930E,D
Q1229 2SC930E,D
T1202 4.43MHz B.P.F
T1201 5.5MHz TRAP
CAR BAL.
IDLER B.P.F
AFC OFFSET
VCO SET CH
BURST WIDTH
ID.DET. ADJ.
SP.1H.DL. ADJ
SP.1H.DL.LEVEL
BURST GATE
Amp
ACC Amp
PILOT BURST
PILOT BURST CL
CONV
APC PD
BG
ACC DET
LIM
Ø Shifter
S&H
APC PD
CONV
APC ID
VCO
Clamp
Sync Sep
Half H Killer
HD gen
S H
TRAPE
COUNT
1/2
1/8
DECOD
1/8
1/32 W-SHAP
OSC
B G 1
B G 2
LIM
F F
M M
M M
ID DET
AFC DET
F F
VCO
DELAY
COMB ADJ
COMB
ACC SET.
PILOT BURST
VXO
X1202
T1206
BPF1201
BPF
T1205
DL1201
2H
TP1222
TP1223
C.REC CURR
TP1224
CF1201 CSB 500E
BURST PHASE
BURST LEVEL
AFC SET
DL1202
1H
TP1220
TP1225
TP1226
TP1227
TP1228
D1201 1S2473
D1202 1S2473
D1203
D1204 1S2473
D1205 1S2473
D1206 1S2473
D1207 1S2473
1S2473
JW202 ⑦
S201 ①
JW202 ④
JW202 ⑤
JW201 ④
JW202 ⑥
S201 ㉑
JW202 ③
JW201 ②
JW202 ①
JW201 ⑥
JW202 ②
JW201 ①
S201 ③
JW201 ③
JW202 ⑧
JW201 ⑤
S201 =S1201
JW201=JW1201
JW202=JW1202
E

.B. VD-2 VIDEO(II)/SYSTEM CONTROL

VIDEO(II)


IDLER B.P.F.
VR1213 BURST PHASE DETECTION
REF.OSC.
CARRIER LEAK
PILOT BURST SIGNAL LEVEL
VXO FREE OSC FREQUENCY
ACC SET
C.REC CURR
T1203
T1204
Q1201
Q1235

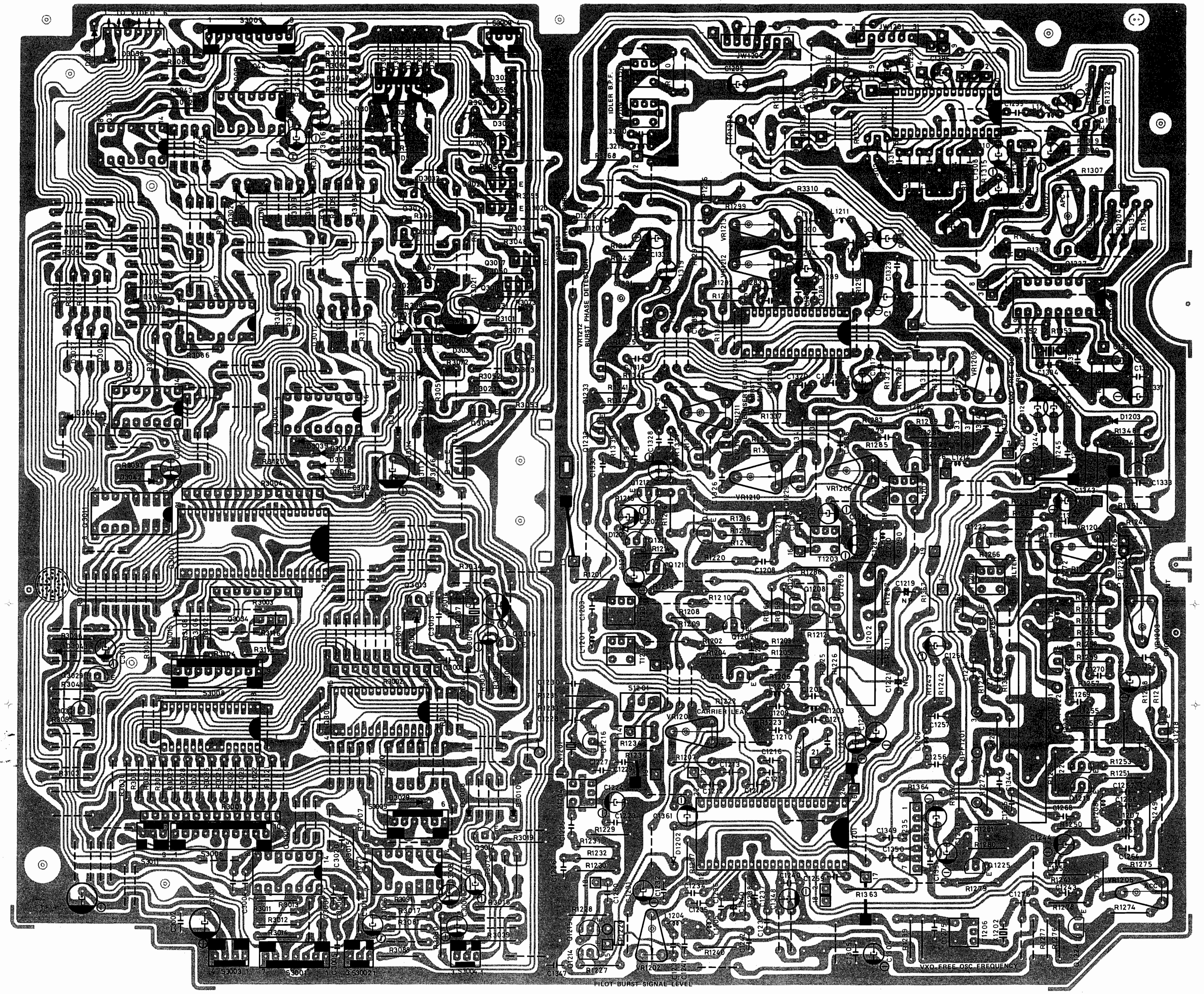
P.C.B. VD-2 VIDEO(II) CIRCUIT


Q1213 2SC930E,D
Q1212 2SC930E,D
Q1211 2SC930E,D
Q1210 2SA844D
Q1209 2SD930E,D
Q1207 2SC945Q,R
Q1208 2SC945Q,R
Q1206 2SC945Q,R
Q1205 2SC930E,D
B.A.T FAST ACC
CAR BAL.
T1202 4.43MHz B.P.F
T1201 5.5MHz TRAP
Q1216 2SC930E,D
Q1215 2SC930E,D
Q1214 2SC930E,D
REF.OSC.
Q1235 TA7347P
BURST GATE
Amp
ACC Amp
PILOT BURST
PILOT BURST CL
CONV
Q1201 M51437P
APC PD
B.G
ACC DET
LIM
Ø Shifter
S&H
APC PD
L1204 C1238 47μ 27P VR1202 2K
PILOT BURST
COMB ADJ
VXO X1202 T1206
BPF1201 BPF
DL1201 2H
C.REC CURR
COMB
ACC SET.
R1260~R1263 390
Q1225 2SA844D
Q1224 2SC930E,D
Q1223 2SC930E,D
Q1222 2SC930E,D
Q1221 2SC930E,D
Q1220 2SC930E,D
Q1219 2SC930E,D
Q1218 2SC930E,D
Q1217 2SC930E,D
Clam
CON

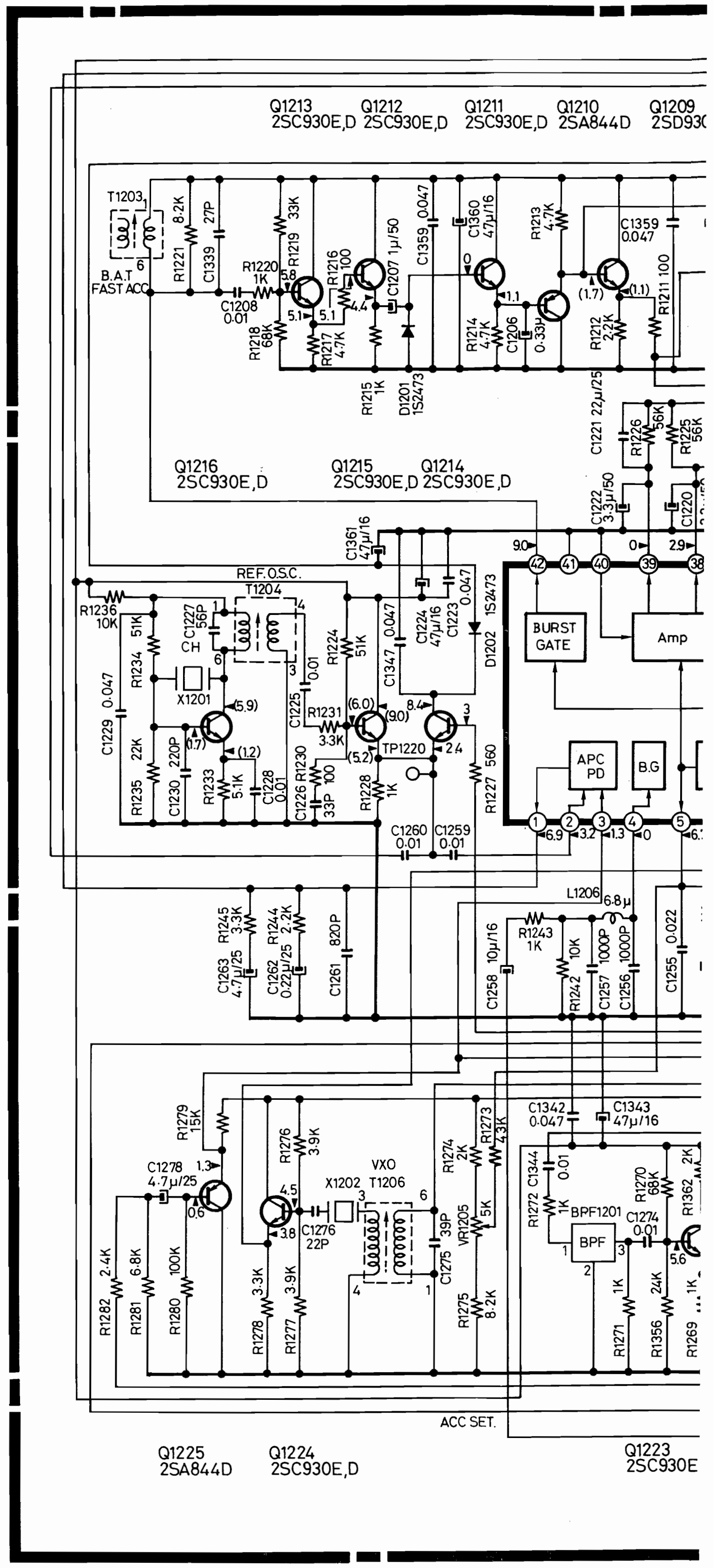
SYS-CON

P.C.B. VD-2 VIDEO(II)/SYSTEM CONTROL

VIDEO(II)



IDLER B.P.F.
BURST PHASE DETECTION
VR1212
CARRIER LEAK
PILOT BURST SIGNAL LEVEL
VXO FREE OSC FREQUENCY
S3001
S3002
S3003
S3004
S3005
S3006
S3009

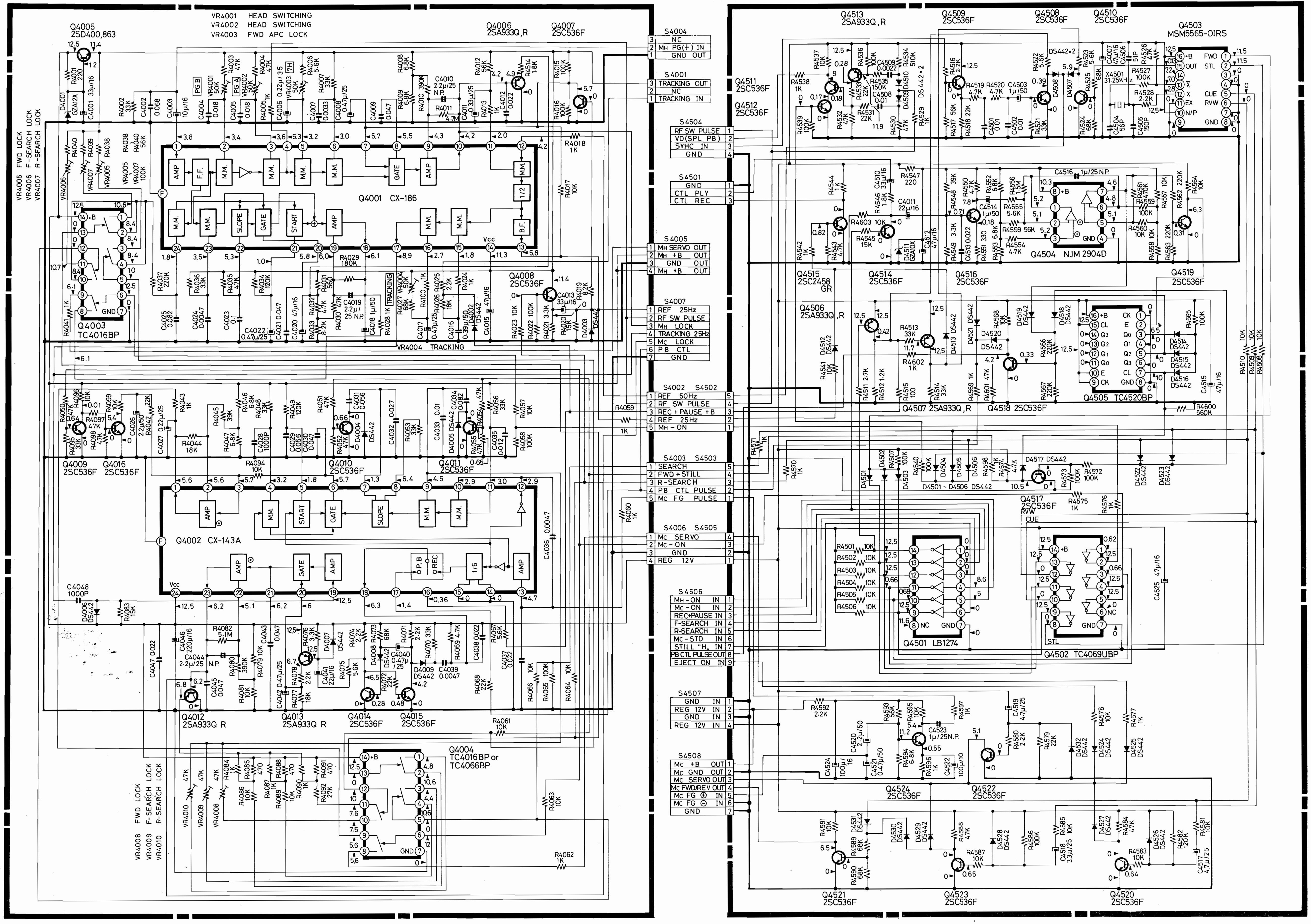


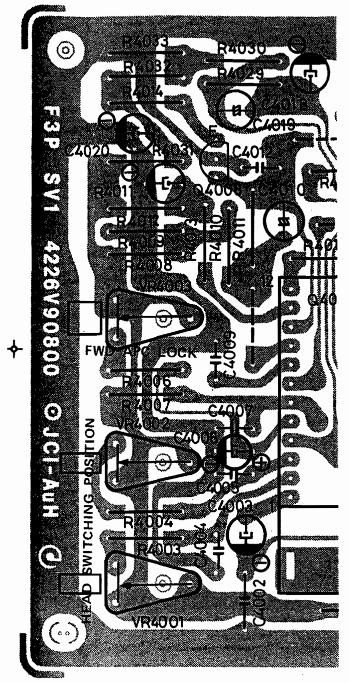
Q1213 2SC930E,D
Q1212 2SC930E,D
Q1211 2SC930E,D
Q1210 2SA844D
Q1209 2SD930
T1203
B.A.T. FAST ACC
Q1216 2SC930E,D
Q1215 2SC930E,D
Q1214 2SC930E,D
REF.OSC.
T1204
X1201
TP1220
BURST GATE
Amp
APC PD
B.G
L1206
VXO
X1202 T1206
BPF1201
BPF
ACC SET.
Q1225 2SA844D
Q1224 2SC930E,D
Q1223 2SC930E

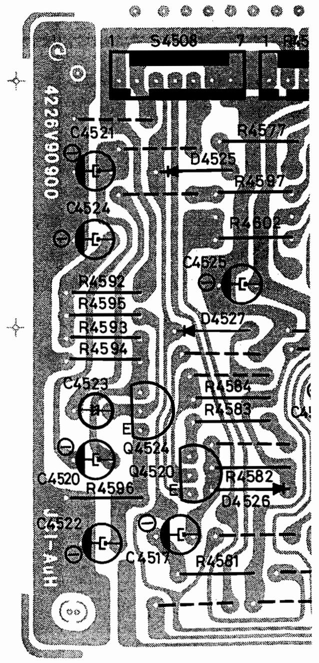
SV-1

P.C.B. SV-1.4 SERVO(I)(II) CIRCUIT

SV-4

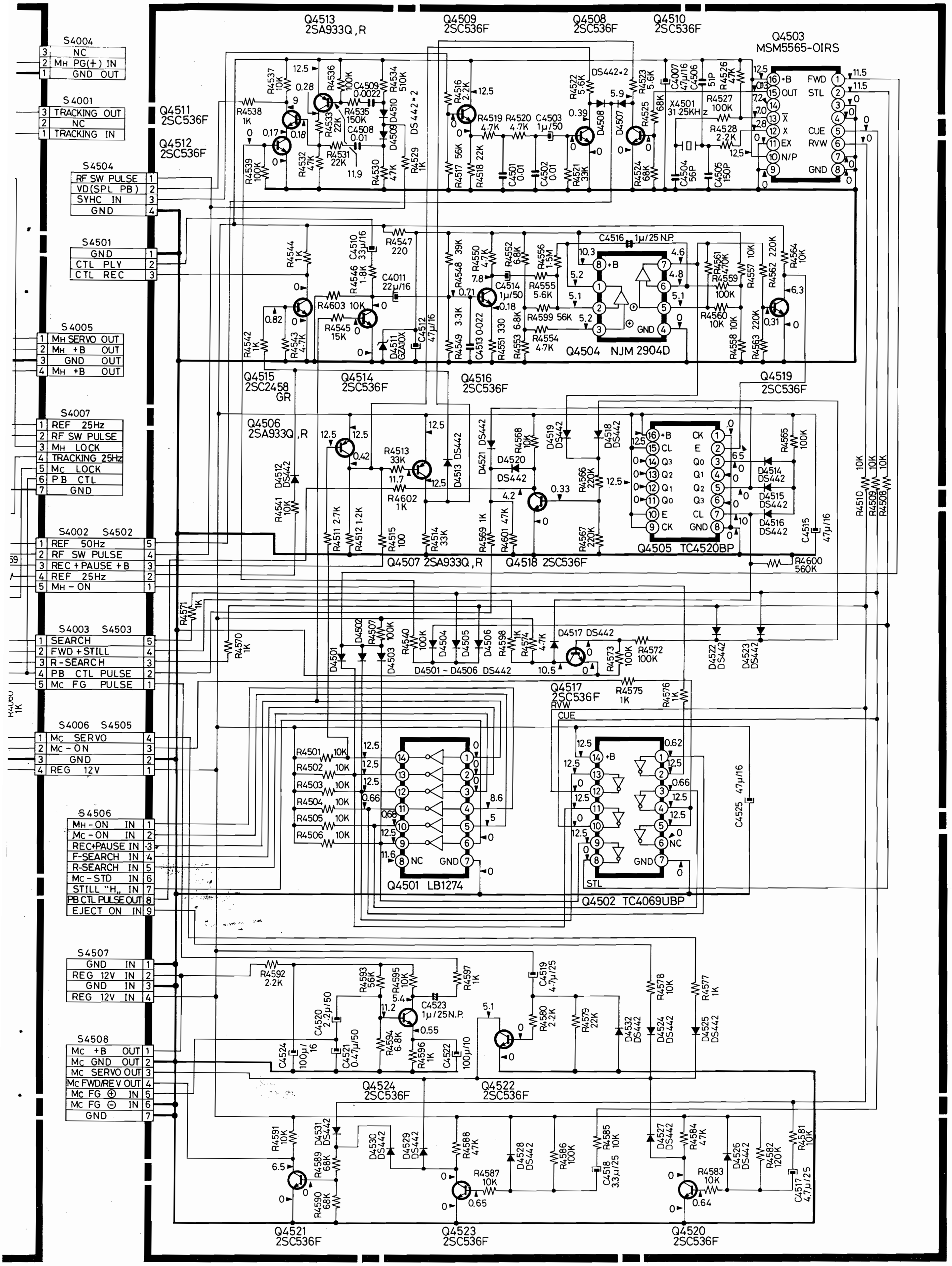

VR4001 HEAD SWITCHING
VR4002 HEAD SWITCHING
VR4003 FWD APC LOCK
VR4005 FWD LOCK
VR4006 F-SEARCH LOCK
VR4007 R-SEARCH LOCK
VR4008 FWD LOCK
VR4009 F-SEARCH LOCK
VR4010 R-SEARCH LOCK
Q4005 2SD400,863
Q4006 2SA933Q,R
Q4007 2SC536F
Q4001 CX-186
Q4003 TC4016BP
Q4008 2SC536F
Q4009 2SC536F
Q4016 2SC536F
Q4010 2SC536F
Q4011 2SC536F
Q4002 CX-143A
Q4012 2SA933Q R
Q4013 2SA933Q R
Q4014 2SC536F
Q4015 2SC536F
Q4004 TC4016BP or TC4066BP
VR4004 TRACKING
S4004
NC
MH PG(+) IN
GND OUT
S4001
TRACKING OUT
NC
TRACKING IN
S4504
RF SW PULSE
VD(SPL PB)
SYHC IN
GND
S4501
GND
CTL PLY
CTL REC
S4005
MH SERVO OUT
MH +B OUT
GND OUT
MH +B OUT
S4007
REF 25Hz
RF SW PULSE
MH LOCK
TRACKING 25Hz
MC LOCK
PB CTL
GND
S4002 S4502
REF 50Hz
RF SW PULSE
REC+PAUSE +B
REF 25Hz
MH-ON
S4003 S4503
SEARCH
FWD+STILL
R-SEARCH
PB CTL PULSE
MC FG PULSE
S4006 S4505
MC SERVO
MC-ON
GND
REG 12V
S4506
MH-ON IN
MC-ON IN
REC+PAUSE IN
F-SEARCH IN
R-SEARCH IN
MC-STO IN
STILL "H" IN
PB CTL PULSE OUT
EJECT ON IN
S4507
GND IN
REG 12V IN
GND IN
REG 12V IN
S4508
MC +B OUT
MC GND OUT
MC SERVO OUT
MC FWD/REV OUT
MC FG ⊕ IN
MC FG ⊖ IN
GND
Q4513 2SA933Q,R
Q4509 2SC536F
Q4508 2SC536F
Q4510 2SC536F
Q4503 MSM5565-01RS
Q4511 2SC536F
Q4512 2SC536F
Q4504 NJM 2904D
Q4515 2SC2458 GR
Q4514 2SC536F
Q4516 2SC536F
Q4519 2SC536F
Q4506 2SA933Q,R
Q4507 2SA933Q,R
Q4518 2SC536F
Q4505 TC4520BP
Q4517 2SC536F
Q4501 LB1274
Q4502 TC4069UBP
Q4524 2SC536F
Q4522 2SC536F
Q4521 2SC536F
Q4523 2SC536F
Q4520 2SC536F
D4501~D4506 DS442
X4501 31.25KHz
FWD
STL
CUE
RVW
GND


F3P SV1 4226V90800 ⊙JCI-AUH
HEAD SWITCHING POSITION
VR4001

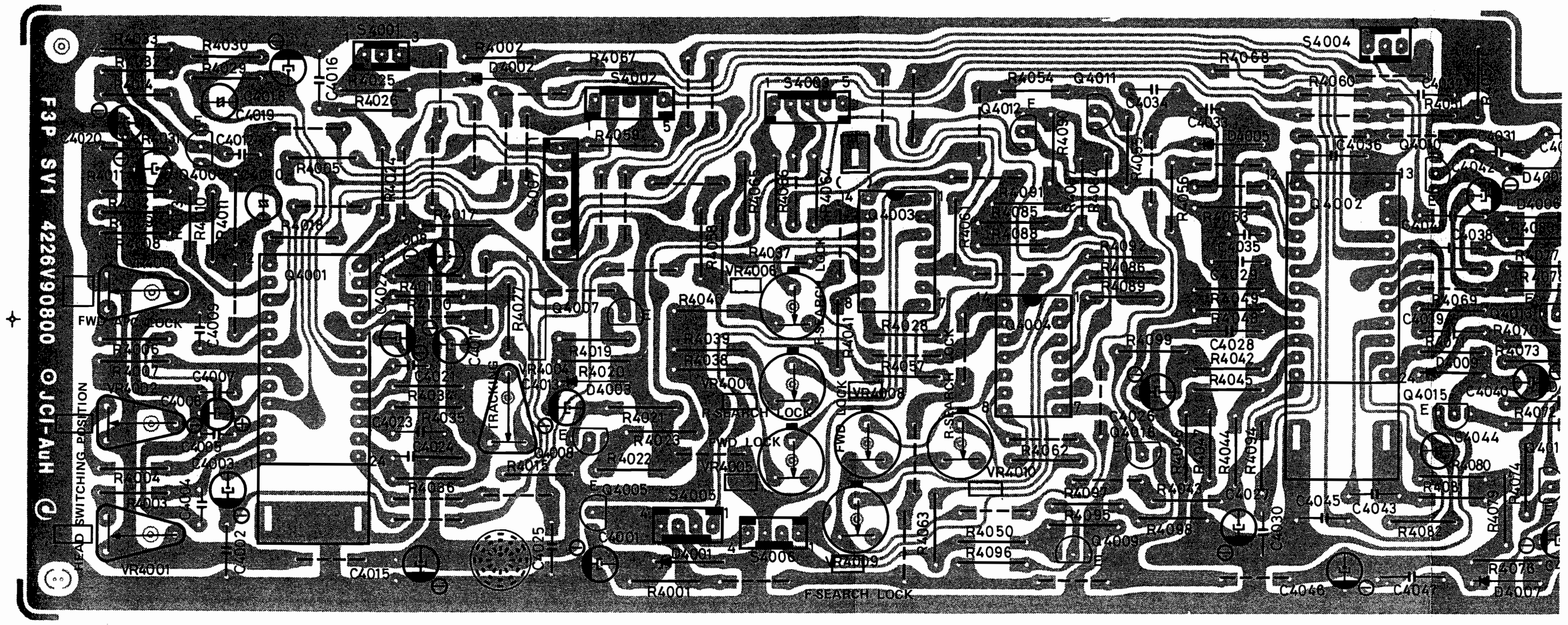

4226V90900
S4508

.4 SERVO(I)(II) CIRCUIT

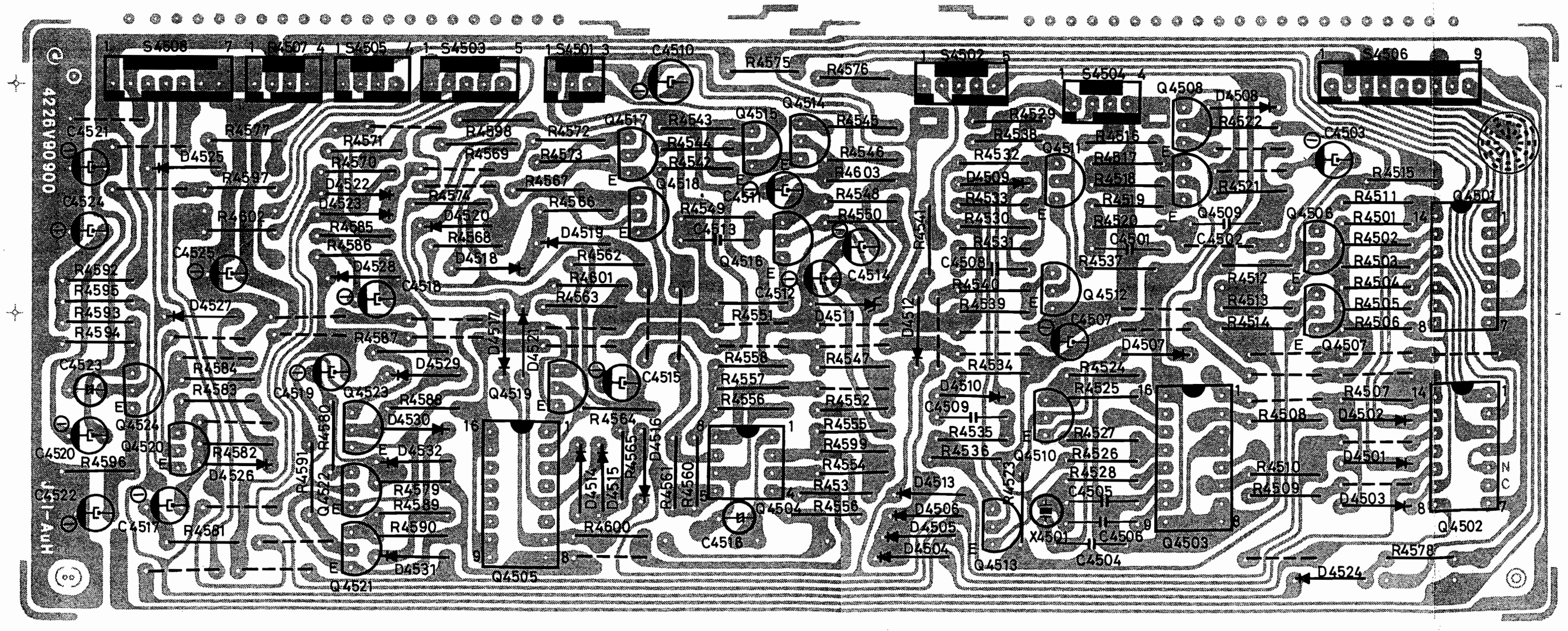
SV-4


S4004
MH PG(+) IN
GND OUT
S4001
TRACKING OUT
NC
TRACKING IN
S4504
RF SW PULSE
VD(SPL PB)
SYHC IN
GND
S4501
GND
CTL PLY
CTL REC
S4005
MH SERVO OUT
MH +B OUT
GND OUT
MH +B OUT
S4007
REF 25Hz
RF SW PULSE
MH LOCK
TRACKING 25Hz
MC LOCK
PB CTL
GND
S4002 S4502
REF 50Hz
RF SW PULSE
REC+PAUSE +B
REF 25Hz
MH-ON
S4003 S4503
SEARCH
FWD+STILL
R-SEARCH
PB CTL PULSE
MC FG PULSE
S4006 S4505
MC SERVO
MC-ON
GND
REG 12V
S4506
MH-ON IN
MC-ON IN
REC+PAUSE IN
F-SEARCH IN
R-SEARCH IN
MC-STD IN
STILL "H" IN
PB CTL PULSE OUT
EJECT ON IN
S4507
GND IN
REG 12V IN
GND IN
REG 12V IN
S4508
MC +B OUT
MC GND OUT
MC SERVO OUT
MC FWD/REV OUT
MC FG ⊕ IN
MC FG ⊖ IN
GND
Q4513 2SA933Q,R
Q4509 2SC536F
Q4508 2SC536F
Q4510 2SC536F
Q4503 MSM5565-01RS
Q4511 2SC536F
Q4512 2SC536F
Q4504 NJM 2904D
Q4515 2SC2458 GR
Q4514 2SC536F
Q4516 2SC536F
Q4519 2SC536F
Q4506 2SA933Q,R
Q4507 2SA933Q,R
Q4518 2SC536F
Q4505 TC4520BP
Q4517 2SC536F
Q4501 LB1274
Q4502 TC4069UBP
Q4524 2SC536F
Q4522 2SC536F
Q4521 2SC536F
Q4523 2SC536F
Q4520 2SC536F
D4501~D4506 DS442
X4501 31.25KHz

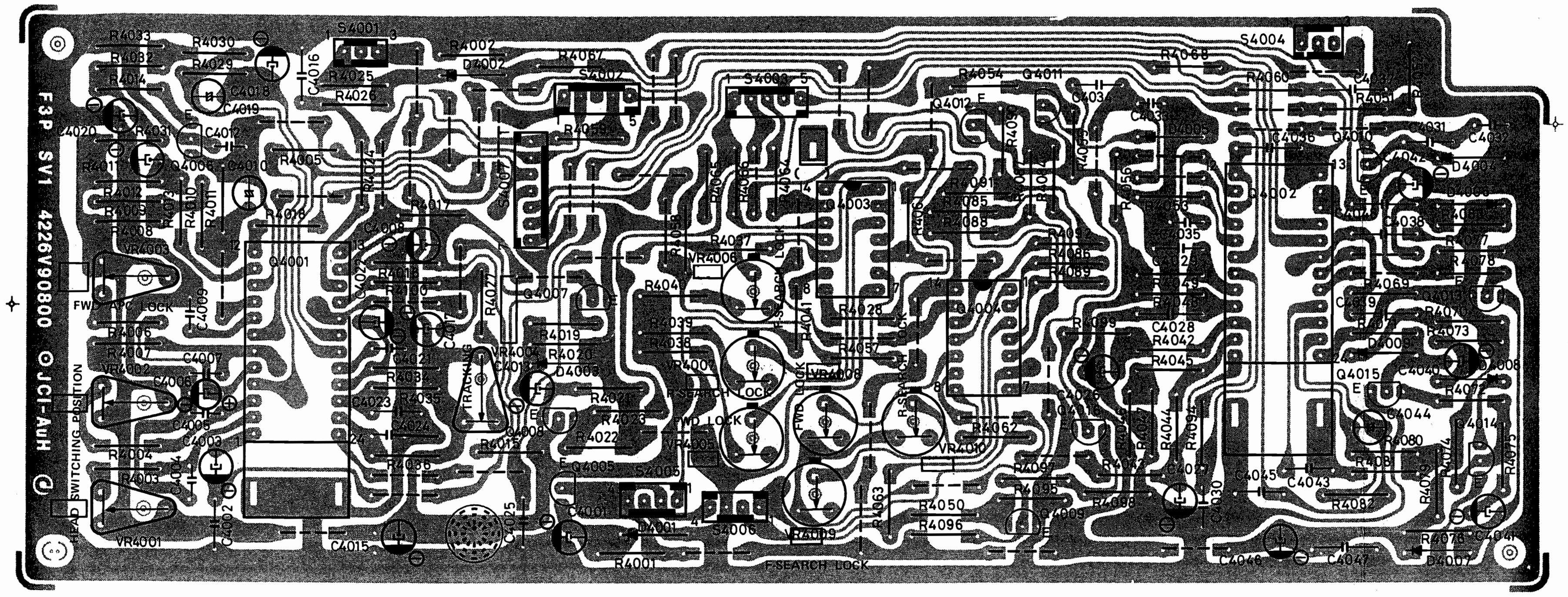
P.C.B. SV-1 SERVO(I)


F3P SV1 4226V90800 JCI-AHH
HEAD SWITCHING POSITION
TRACKING
F-SEARCH LOCK
FWD LOCK
S4001
S4002
S4003
S4004
S4005
S4006
VR4001

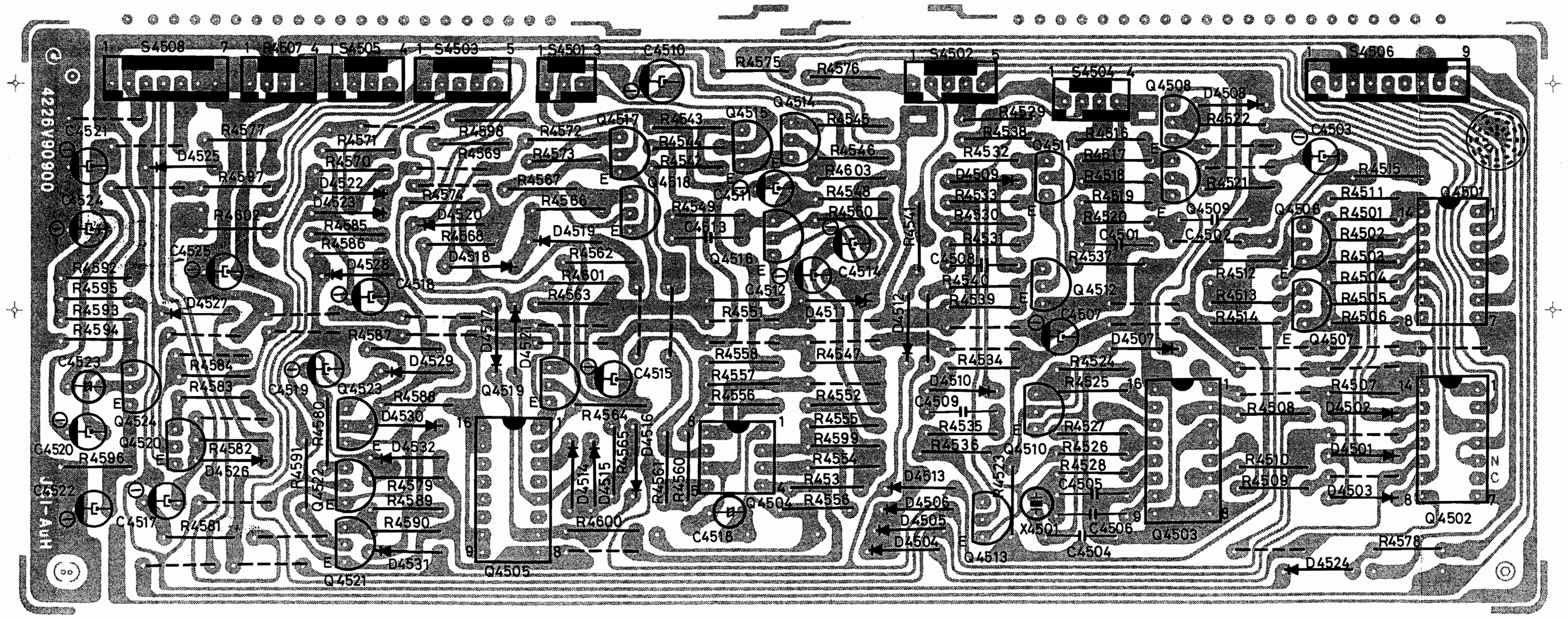
P.C.B. SV-4 SERVO(II)


4226V90900 JCI-AHH
S4508
S4507
S4505
S4503
S4501
S4502
S4504
S4506
Q4501
Q4502
Q4503
Q4505
X4501

P.C.B. SV-1 SERVO(I)


F3P SV1 4226V90800 ©JCI-AuH
HEAD SWITCHING POSITION
FWD LOCK
TRACKING
F.SEARCH LOCK
R.SEARCH LOCK
S4001
S4002
S4003
S4004
S4005
S4006
Q4001
VR4001
VR4002
VR4003
VR4004
VR4006
VR4008
VR4010

P.C.B. SV-4 SERVO(II)


4226V90800 JCI-AuH
S4508
S4507
S4505
S4503
S4501
S4502
S4504
S4506
Q4501
Q4502
Q4503
Q4505
X4501

NOTES:

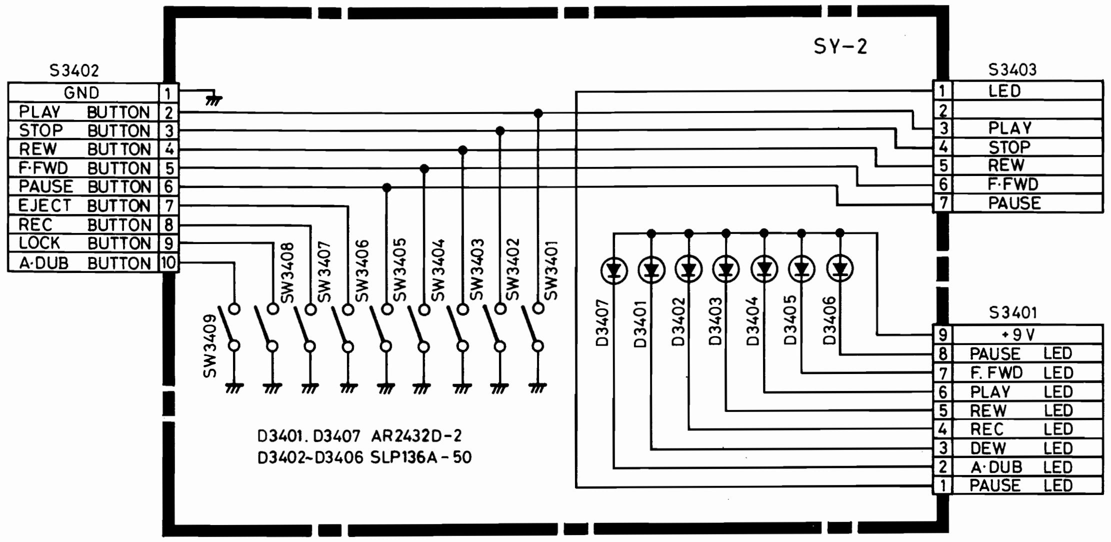
1. All resistance values in "OHMS" unless otherwise noted. (K=1,000 M=1,000,000)
2. All capacitance values in "μfd" unless otherwise noted.
   p = pico farad
3. All inductance values in "mH" unless otherwise noted. μ= micro henry
4. Marks indicated in each connector indicate the following color of wire.

B : Black	V : Violet	BR : Brown
R : Red	Y : Yellow	GR : Green
W : White	G : Gray	BL : Blue
P : Pink	LB : Light Blue	OR : Orange

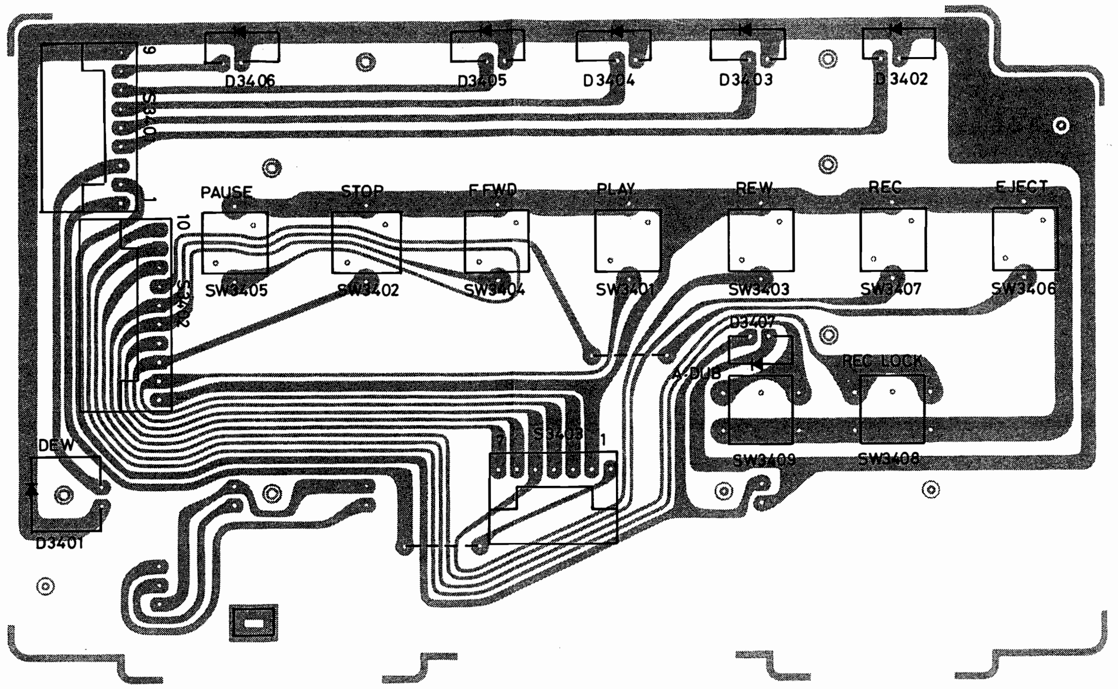
PRODUCT SAFETY NOTICE

THE COMPONENTS DESIGNATED BY A SYMBOL (⚠) IN THIS SCHEMATIC DIAGRAM DESIGNATES COMPONENTS WHOSE VALUE ARE OF SPECIAL SIGNIFICANCE TO PRODUCT SAFETY. SHOULD ANY COMPONENT DESIGNATED BY A SYMBOL NEED TO BE REPLACED, USE ONLY THE PART DESIGNATED IN THE PARTS LIST. DO NOT DEVIATE FROM THE RESISTANCE, WATTAGE AND VOLTAGE RATINGS SHOWN.

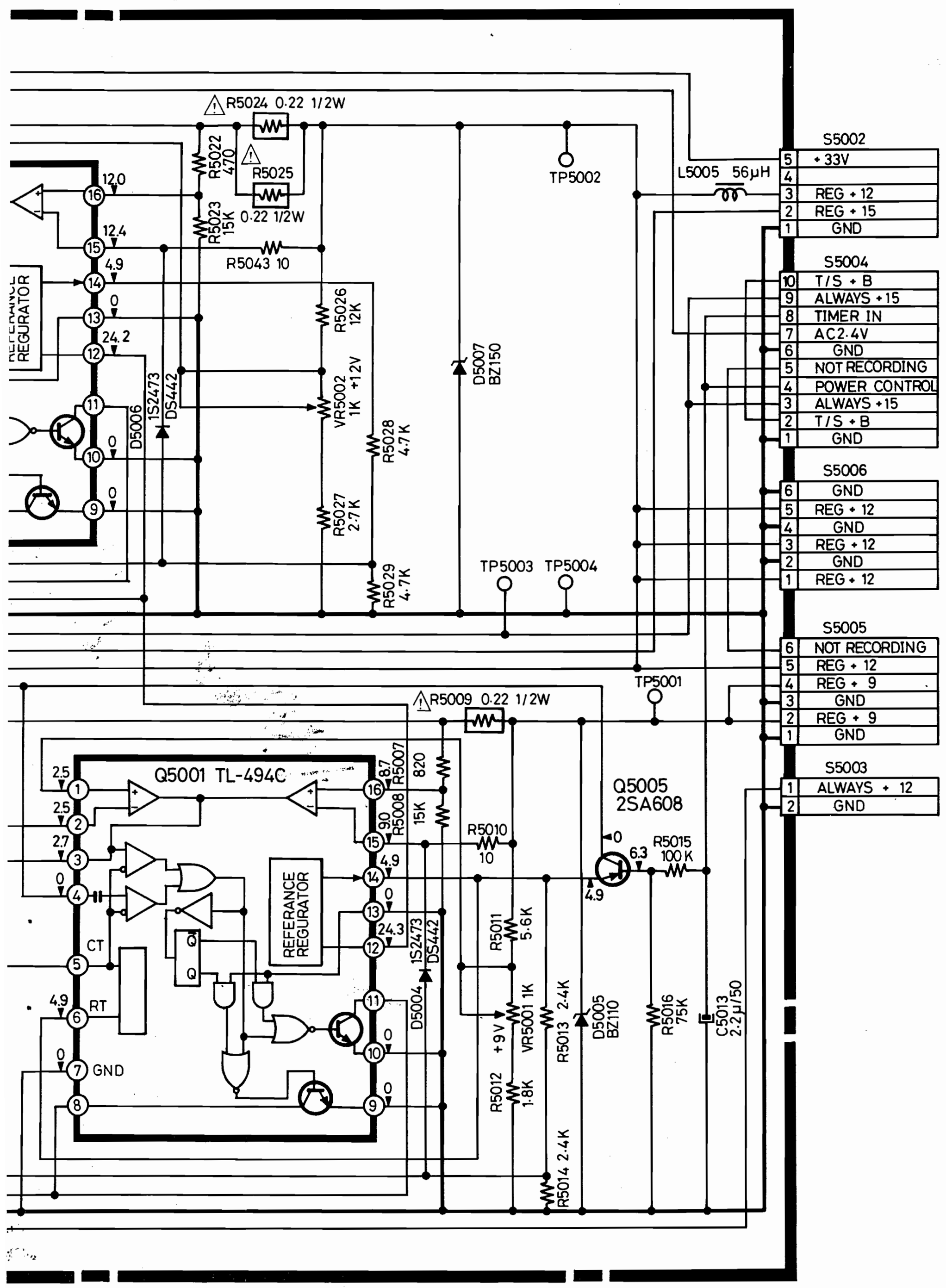
P.C.B. SY-2 OPERATION SWITCH CIRCUIT (South Africa)


SY-2
S3402
1 GND
2 PLAY BUTTON
3 STOP BUTTON
4 REW BUTTON
5 F·FWD BUTTON
6 PAUSE BUTTON
7 EJECT BUTTON
8 REC BUTTON
9 LOCK BUTTON
10 A·DUB BUTTON
S3403
1 LED
2
3 PLAY
4 STOP
5 REW
6 F·FWD
7 PAUSE
SW3409
SW3408
SW3407
SW3406
SW3405
SW3404
SW3403
SW3402
SW3401
D3407
D3401
D3402
D3403
D3404
D3405
D3406
S3401
9 +9V
8 PAUSE LED
7 F. FWD LED
6 PLAY LED
5 REW LED
4 REC LED
3 DEW LED
2 A·DUB LED
1 PAUSE LED
D3401. D3407 AR2432D-2
D3402~D3406 SLP136A-50

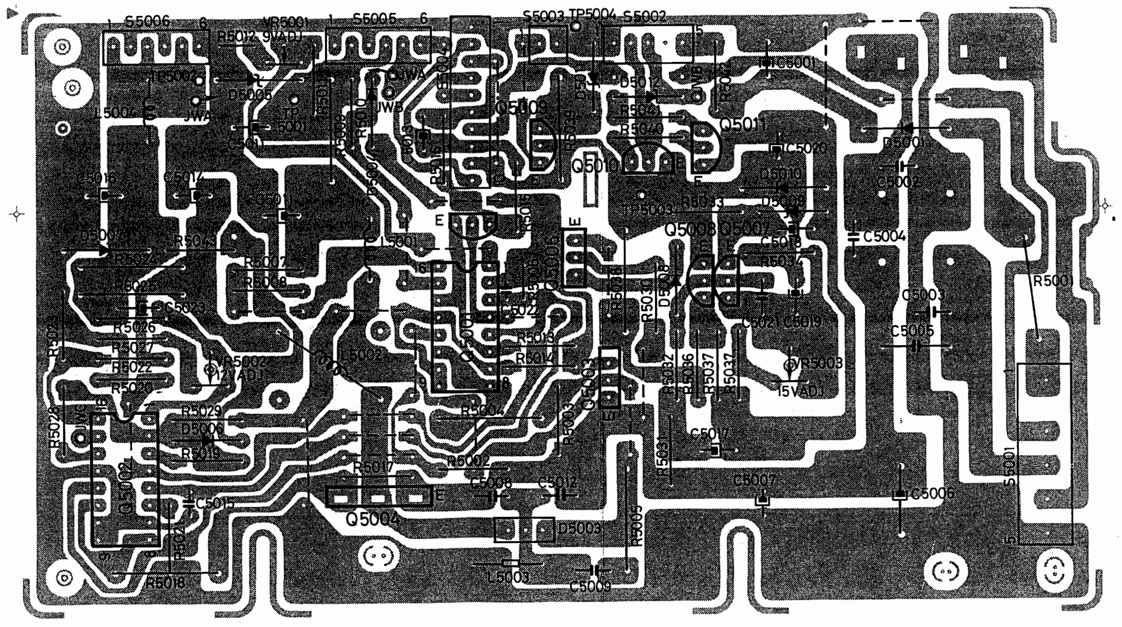
P.C.B. SY-2 OPERATION SWITCH


D3406
D3405
D3404
D3403
D3402
PAUSE
STOP
F.FWD
PLAY
REW
REC
EJECT
SW3405
SW3402
SW3404
SW3401
SW3403
SW3407
SW3406
D3407
A·DUB
REC LOCK
SW3409
SW3408
DEW
D3401

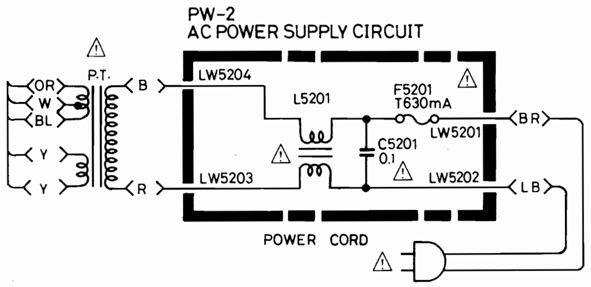
SUPPLY CIRCUIT


R5024 0.22 1/2W
R5022 470
R5025 0.22 1/2W
R5023 15K
R5043 10
TP5002
L5005 56μH
REFERENCE REGURATOR
R5026 12K
VR5002 1K +12V
R5028 4.7K
R5027 2.7K
R5029 4.7K
D5007 BZ150
D5006 1S2473
DS442
TP5003
TP5004
TP5001
12.0
12.4
4.9
0
24.2
S5002
5 +33V
4
3 REG +12
2 REG +15
1 GND
S5004
10 T/S +B
9 ALWAYS +15
8 TIMER IN
7 AC2.4V
6 GND
5 NOT RECORDING
4 POWER CONTROL
3 ALWAYS +15
2 T/S +B
1 GND
S5006
6 GND
5 REG +12
4 GND
3 REG +12
2 GND
1 REG +12
S5005
6 NOT RECORDING
5 REG +12
4 REG +9
3 GND
2 REG +9
1 GND
S5003
1 ALWAYS +12
2 GND
R5009 0.22 1/2W
Q5001 TL-494C
REFERANCE REGURATOR
CT
RT
GND
Q5005 2SA608
R5007 820
R5008 15K
R5010 10
R5015 100K
R5011 5.6K
VR5001 1K
+9V
R5012 1.8K
R5013 2.4K
R5014 2.4K
D5005 BZ110
D5004 1S2473
DS442
R5016 75K
C5013 2.2μ/50
2.5
2.7
4.9
8.7
9.0
6.3
24.3

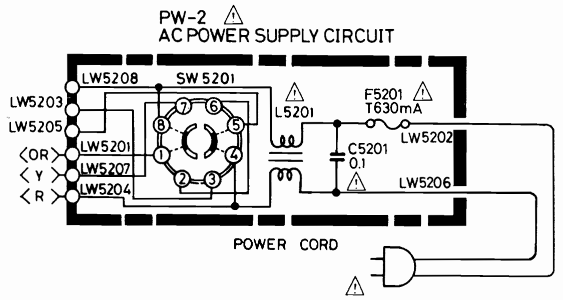
P.C.B. PW-1 DC POWER SUPPLY


S5006
VR5001
S5005
S5003
TP5004
S5002
Q5008
Q5011
Q5010
Q5009
Q5007
C5004
C5003
C5005
C5006
R5001
S5001
VR5003
Q5002
Q5004
Q5003
D5003
L5003
C5009
R5018
C5007

P.C.B. PW-2 AC SUPPLY CIRCUIT

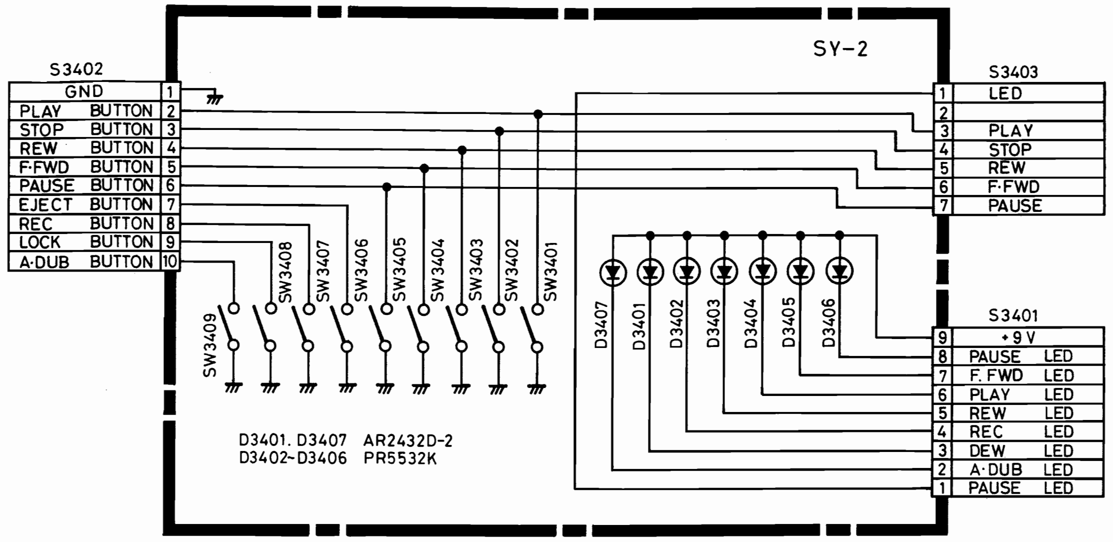

PW-2
AC POWER SUPPLY CIRCUIT
OR
W
BL
Y
Y
P.T.
B
R
LW5204
L5201
F5201 T630mA
LW5201
C5201 0.1
LW5203
LW5202
BR
LB
POWER CORD

P.C.B. PW-2 AC SUPPLY CIRCUIT
(South Africa, Indonesia)

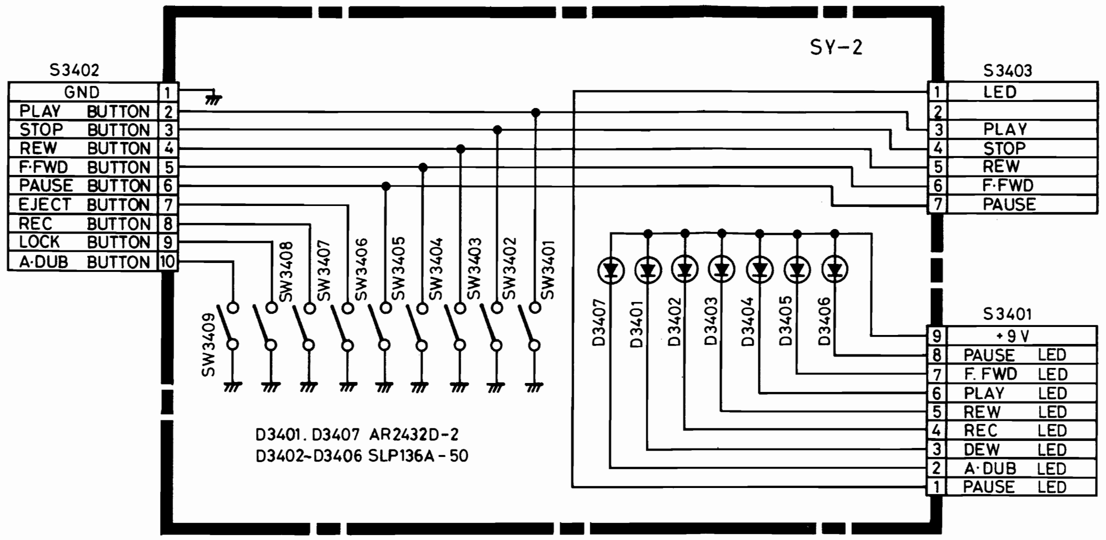

PW-2
AC POWER SUPPLY CIRCUIT
LW5208
SW 5201
LW5203
LW5205
OR
Y
R
LW5201
LW5207
LW5204
L5201
F5201 T630mA
LW5202
C5201 0.1
LW5206
POWER CORD

Ⓖ

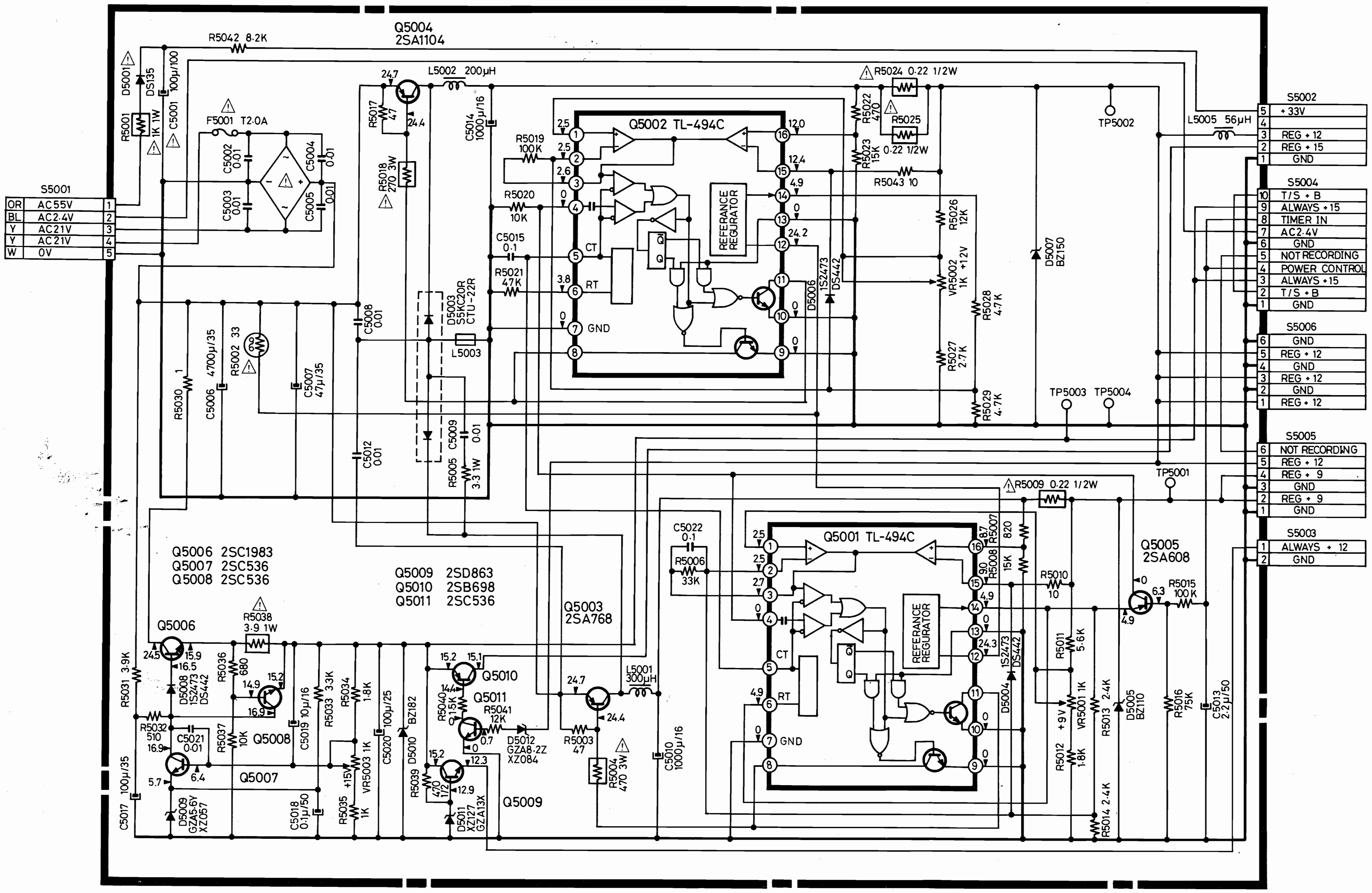
P.C.B. SY-2 OPERATION SWITCH CIRCUIT


SY-2
S3402
GND
PLAY BUTTON
STOP BUTTON
REW BUTTON
F·FWD BUTTON
PAUSE BUTTON
EJECT BUTTON
REC BUTTON
LOCK BUTTON
A·DUB BUTTON
S3403
LED
PLAY
STOP
REW
F·FWD
PAUSE
SW3409
SW3408
SW3407
SW3406
SW3405
SW3404
SW3403
SW3402
SW3401
D3407
D3401
D3402
D3403
D3404
D3405
D3406
S3401
+9V
PAUSE LED
F. FWD LED
PLAY LED
REW LED
REC LED
DEW LED
A·DUB LED
PAUSE LED
D3401, D3407 AR2432D-2
D3402~D3406 PR5532K

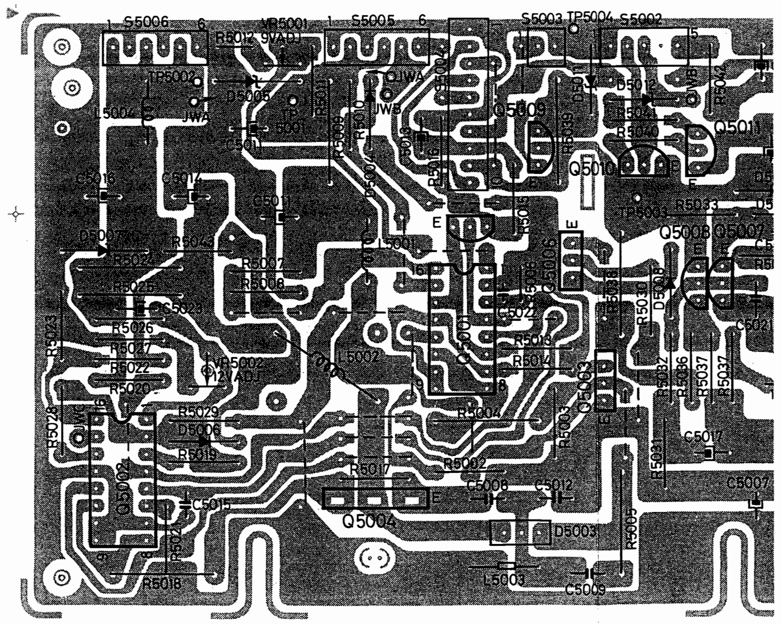
P.C.B. SY-2 OPERATION SWITCH CIRCUIT (South Africa)


SY-2
S3402
GND
PLAY BUTTON
STOP BUTTON
REW BUTTON
F·FWD BUTTON
PAUSE BUTTON
EJECT BUTTON
REC BUTTON
LOCK BUTTON
A·DUB BUTTON
S3403
LED
PLAY
STOP
REW
F·FWD
PAUSE
SW3409
SW3408
SW3407
SW3406
SW3405
SW3404
SW3403
SW3402
SW3401
D3407
D3401
D3402
D3403
D3404
D3405
D3406
S3401
+9V
PAUSE LED
F. FWD LED
PLAY LED
REW LED
REC LED
DEW LED
A·DUB LED
PAUSE LED
D3401, D3407 AR2432D-2
D3402~D3406 SLP136A-50

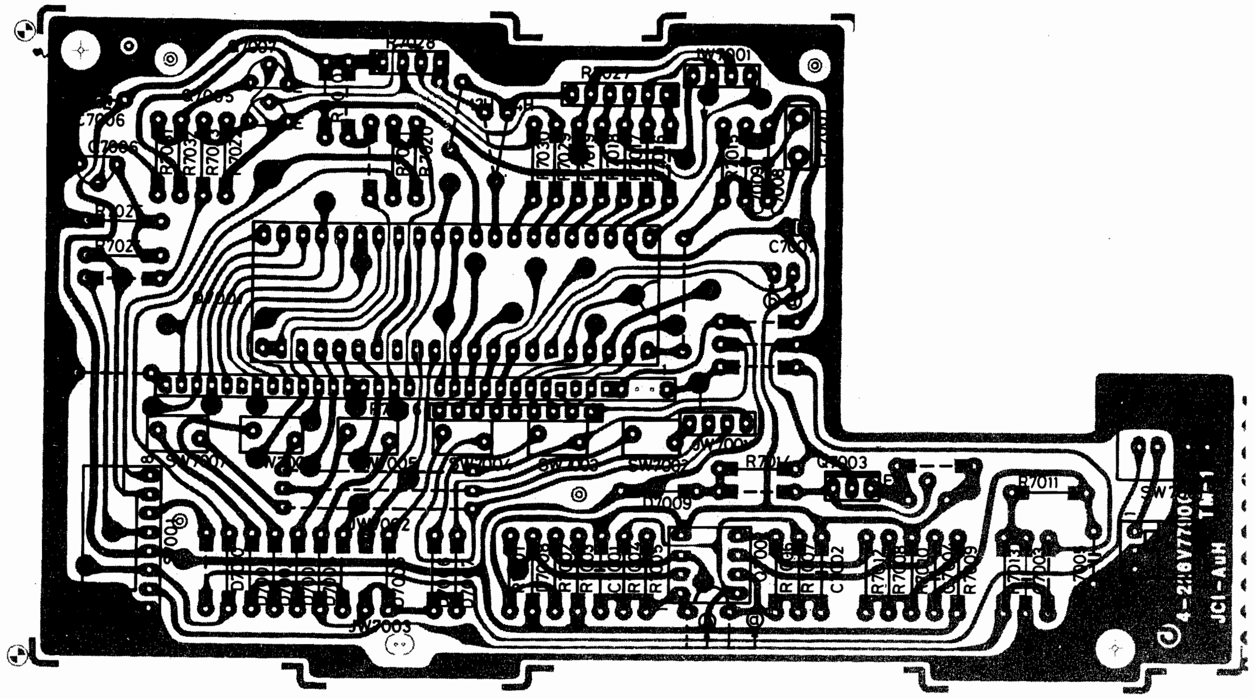
P.C.B. PW-1 DC POWER SUPPLY CIRCUIT


R5042 8.2K
Q5004
2SA1104
D5001
D5135
C5001 100µ/100
R5001 1K 1W
F5001 T2.0A
C5002 0.01
C5003 0.01
C5004 0.01
C5005 0.01
S5001
OR AC55V
BL AC2.4V
Y AC21V
Y AC21V
W 0V
R5017 47
R5018 270 3W
L5002 200µH
C5014 1000µ/16
R5019 100K
R5020 10K
C5015 0.1
R5021 47K
Q5002 TL-494C
REFERANCE REGURATOR
CT
RT
GND
R5024 0.22 1/2W
R5022 470
R5025 0.22 1/2W
R5023 15K
R5043 10
R5026 12K
VR5002 1K +12V
R5027 2.7K
R5028 4.7K
R5029 4.7K
D5006 1S2473
DS442
D5007 BZ150
TP5002
TP5003
TP5004
L5005 56µH
S5002
+33V
REG +12
REG +15
GND
S5004
T/S +B
ALWAYS +15
TIMER IN
AC2.4V
GND
NOT RECORDING
POWER CONTROL
ALWAYS +15
T/S +B
GND
S5006
GND
REG +12
GND
REG +12
GND
REG +12
S5005
NOT RECORDING
REG +12
REG +9
GND
REG +9
GND
S5003
ALWAYS +12
GND
R5030 1
C5006 4700µ/35
R5002 33
C5007 47µ/35
C5008 0.01
D5003 S5KC20R CTU-22R
L5003
C5009 0.01
C5012 0.01
R5005 3.3 1W
TP5001
R5009 0.22 1/2W
Q5006 2SC1983
Q5007 2SC536
Q5008 2SC536
Q5009 2SD863
Q5010 2SB698
Q5011 2SC536
Q5003
2SA768
C5022 0.1
R5006 33K
Q5001 TL-494C
REFERANCE REGURATOR
R5007 820
R5008 15K
R5010 10
Q5005
2SA608
R5015 100K
R5011 5.6K
VR5001 1K +9V
R5012 1.8K
R5013 2.4K
R5014 2.4K
D5005 BZ110
R5016 75K
C5013 2.2µ/50
D5004 1S2473 DS442
Q5006
R5038 3.9 1W
R5031 3.9K
D5008 1S2473 DS442
R5036 680
R5032 510
C5021 0.01
R5037 10K
Q5008
Q5007
C5017 100µ/35
D5009 GZA5.6Y XZ057
C5019 10µ/16
C5018 0.1µ/50
R5033 33K
R5034 1.8K
VR5003 1K +15V
R5035 1K
C5020 100µ/25
D5010 BZ182
R5040 15K
Q5010
Q5011
R5041 12K
D5012 GZA8.2Z XZ084
R5039 470 1/2
D5011 XZ127 GZA13X
Q5009
L5001 300µH
R5003 47
R5004 470 3W
C5010 1000µ/16

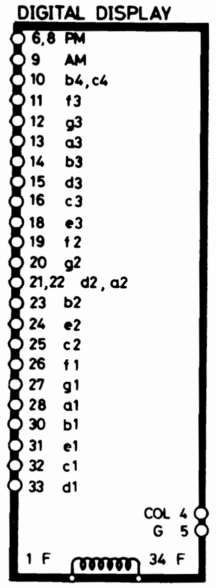
P.C.B. PW-1 DC POWER SUPPLY


S5006
S5005
S5003
TP5004
S5002
TP5002
L5002
R5040
R5038
L5003
C5009
Q5004
D5003
Q5009
Q5010
Q5011
Q5008

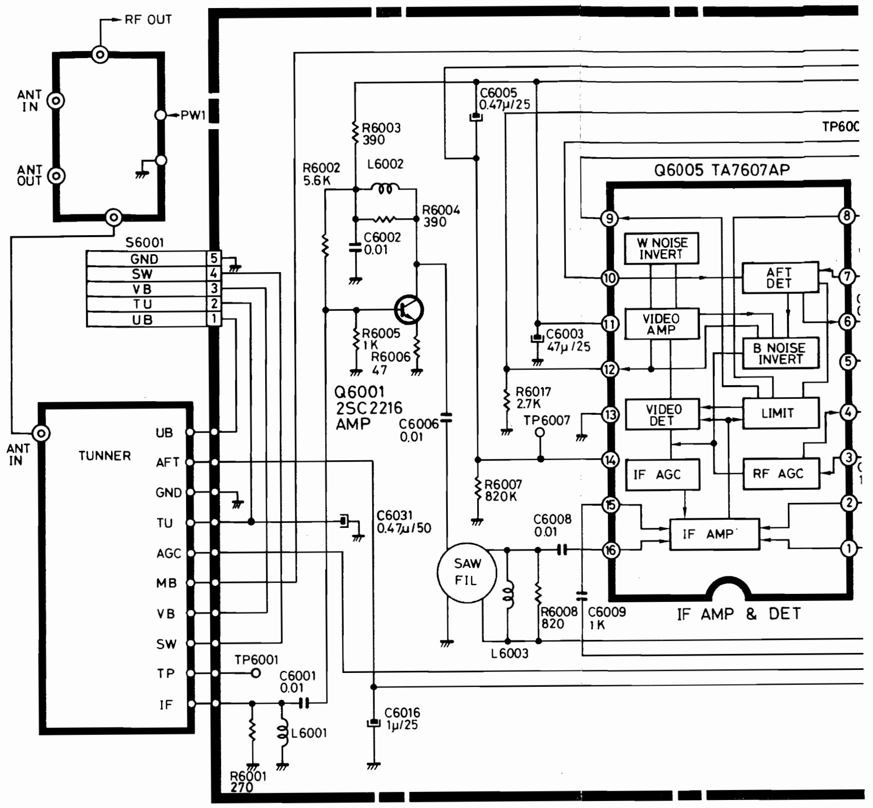
P.C.B. TM-1 TIMER


R7009
C7005
C7006
C7008
R7028
R7027
SW7001
R7002
C7001
R7014
R7011
R7001
SW7007
SW7006
SW7005
SW7004
SW7003
SW7002
SW7008
R7010
Q7003
D7009
R7011
4-2881771106 TM-1
JCI-AUH

P.C.B. TM-1 Australia New Zealand

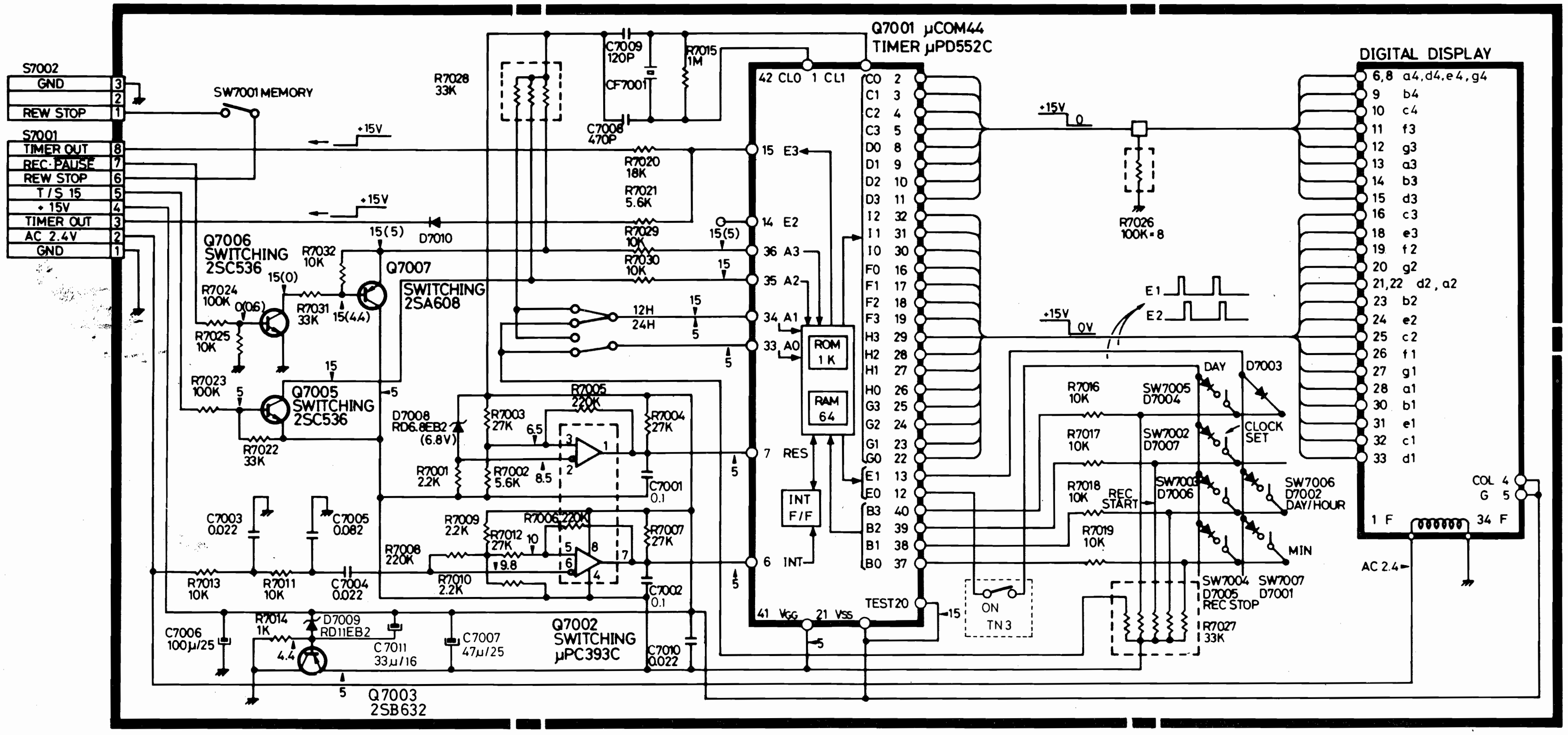

DIGITAL DISPLAY
6,8 PM
9 AM
10 b4,c4
11 f3
12 g3
13 a3
14 b3
15 d3
16 c3
18 e3
19 f2
20 g2
21,22 d2, a2
23 b2
24 e2
25 c2
26 f1
27 g1
28 a1
30 b1
31 e1
32 c1
33 d1
COL 4
G 5
1 F
34 F

P.C.B. TN-1

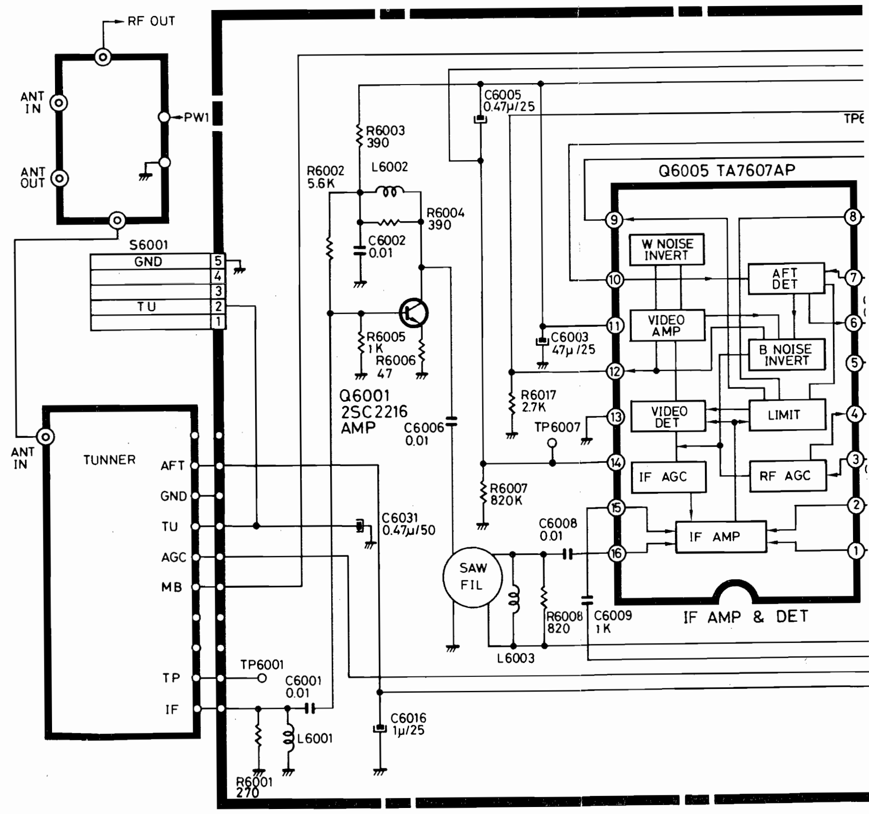

RF OUT
ANT IN
ANT OUT
PW1
S6001
GND
SW
VB
TU
UB
ANT IN
TUNNER
UB
AFT
GND
TU
AGC
MB
VB
SW
TP
IF
TP6001
C6001 0.01
L6001
R6001 270
R6003 390
L6002
R6002 5.6K
C6002 0.01
R6004 390
R6005 1K
R6006 47
Q6001 2SC2216 AMP
C6006 0.01
C6005 0.47μ/25
C6003 47μ/25
R6017 2.7K
TP6007
R6007 820K
C6031 0.47μ/50
C6008 0.01
SAW FIL
R6008 820
C6009 1K
L6003
C6016 1μ/25
TP600
Q6005 TA7607AP
W NOISE INVERT
AFT DET
VIDEO AMP
B NOISE INVERT
VIDEO DET
LIMIT
IF AGC
RF AGC
IF AMP
IF AMP & DET

(South Africa, Australia, New Zealand, Indonesia R6025 !

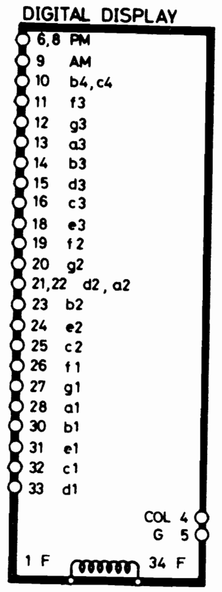
P.C.B. TM-1 TIMER CIRCUIT

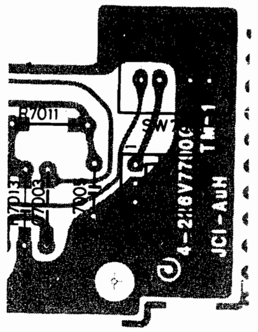

S7002
GND
REW STOP
S7001
TIMER OUT
REC-PAUSE
REW STOP
T/S 15
+15V
TIMER OUT
AC 2.4V
GND
SW7001 MEMORY
+15V
+15V
R7028 33K
Q7006 SWITCHING 2SC536
R7032 10K
Q7007 SWITCHING 2SA608
R7024 100K
R7025 10K
R7031 33K
R7023 100K
Q7005 SWITCHING 2SC536
R7022 33K
D7010
D7008 RD6.8EB2 (6.8V)
R7003 27K
R7005 220K
R7004 27K
R7001 2.2K
R7002 5.6K
C7001 0.1
R7009 2.2K
R7006 220K
R7012 27K
R7007 27K
R7008 220K
R7010 2.2K
C7002 0.1
C7003 0.022
C7005 0.082
R7013 10K
R7011 10K
C7004 0.022
C7006 100μ/25
R7014 1K
D7009 RD11EB2
C7011 33μ/16
C7007 47μ/25
Q7002 SWITCHING μPC393C
C7010 0.022
Q7003 2SB632
C7009 120P
R7015 1M
CF7001
C7008 470P
R7020 18K
R7021 5.6K
R7029 10K
R7030 10K
12H
24H
Q7001 μCOM44 TIMER μPD552C
42 CL0
1 CL1
15 E3
14 E2
36 A3
35 A2
34 A1
33 A0
ROM 1K
RAM 64
7 RES
INT F/F
6 INT
41 VGG
21 VSS
TEST 20
+15V
R7026 100K×8
E1
E2
+15V
0V
DAY
D7003
R7016 10K
SW7005 D7004
R7017 10K
SW7002 D7007
CLOCK SET
R7018 10K
REC START
SW7003 D7006
SW7006 D7002 DAY/HOUR
R7019 10K
MIN
SW7004 D7005 REC STOP
SW7007 D7001
R7027 33K
ON TN3
AC 2.4
DIGITAL DISPLAY
6,8 a4,d4,e4,g4
9 b4
10 c4
11 f3
12 g3
13 a3
14 b3
15 d3
16 c3
18 e3
19 f2
20 g2
21,22 d2, a2
23 b2
24 e2
25 c2
26 f1
27 g1
28 a1
30 b1
31 e1
32 c1
33 d1
COL 4
G 5
1 F
34 F

P.C.B.

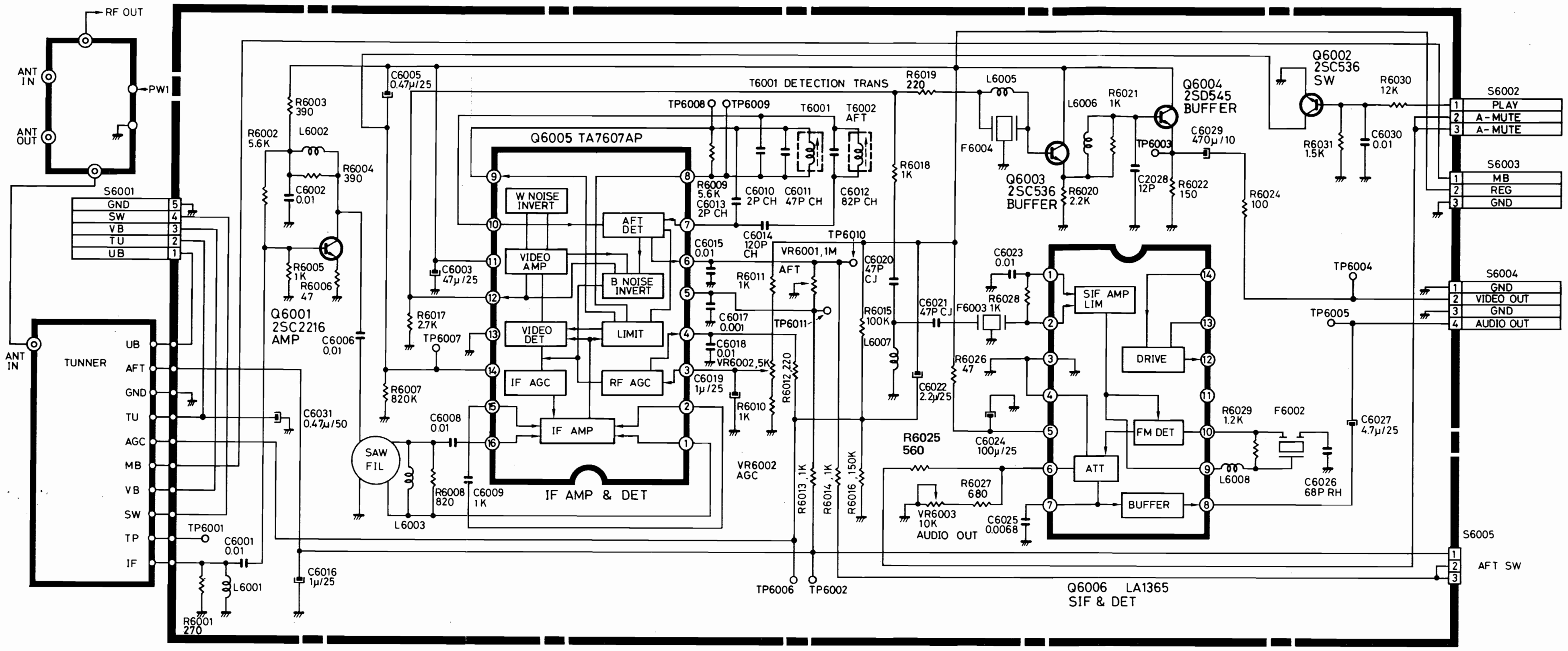

RF OUT
ANT IN
ANT OUT
PW1
S6001
GND
TU
ANT IN
TUNNER
AFT
GND
TU
AGC
MB
TP
IF
TP6001
C6001 0.01
L6001
R6001 270
R6003 390
L6002
R6002 5.6K
C6002 0.01
R6004 390
R6005 1K
R6006 47
Q6001 2SC2216 AMP
C6006 0.01
C6005 0.47μ/25
C6003 47μ/25
R6017 2.7K
TP6007
R6007 820K
C6031 0.47μ/50
C6008 0.01
SAW FIL
R6006 820
C6009 1K
L6003
C6016 1μ/25
Q6005 TA7607AP
W NOISE INVERT
AFT DET
VIDEO AMP
B NOISE INVERT
VIDEO DET
LIMIT
IF AGC
RF AGC
IF AMP
IF AMP & DET

P.C.B. TM-1 Australia
New Zealand


DIGITAL DISPLAY
6,8 PM
9 AM
10 b4,c4
11 f3
12 g3
13 a3
14 b3
15 d3
16 c3
18 e3
19 f2
20 g2
21,22 d2, a2
23 b2
24 e2
25 c2
26 f1
27 g1
28 a1
30 b1
31 e1
32 c1
33 d1
COL 4
G 5
1 F
34 F

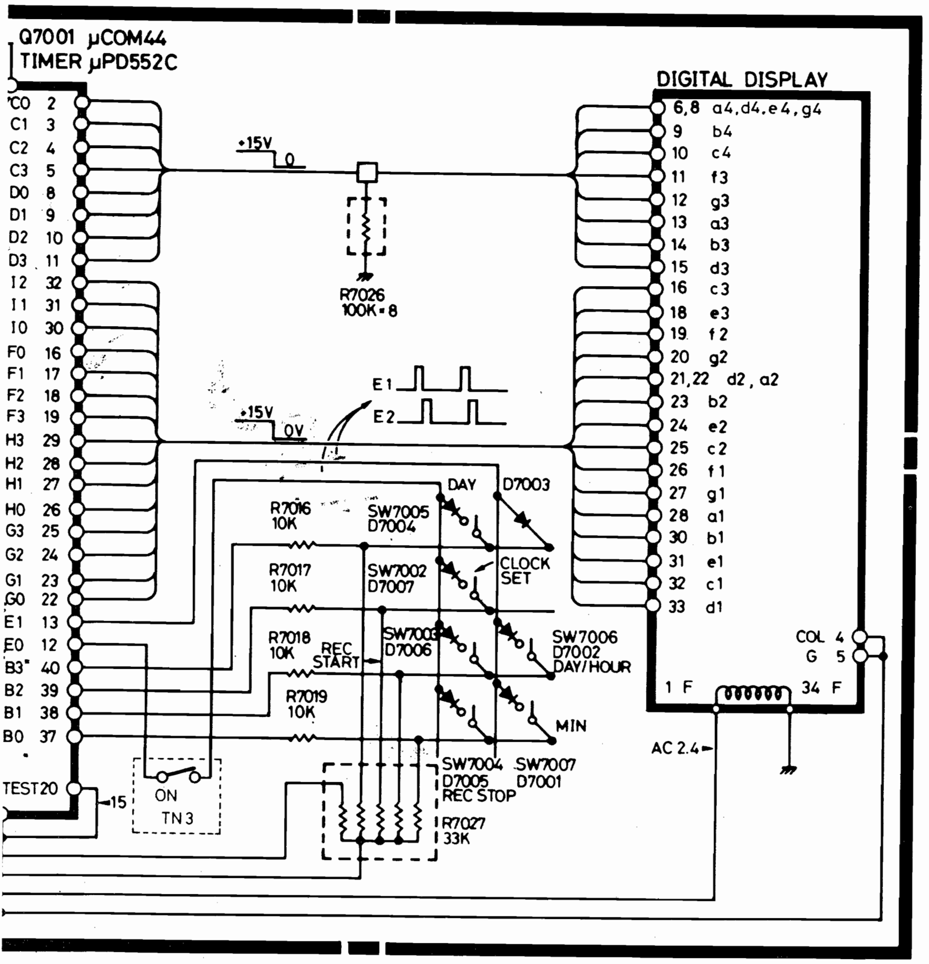

R7011
SW
JCI-AuH TM-1
4-2:8V771101

P.C.B. TN-1 IF CIRCUIT

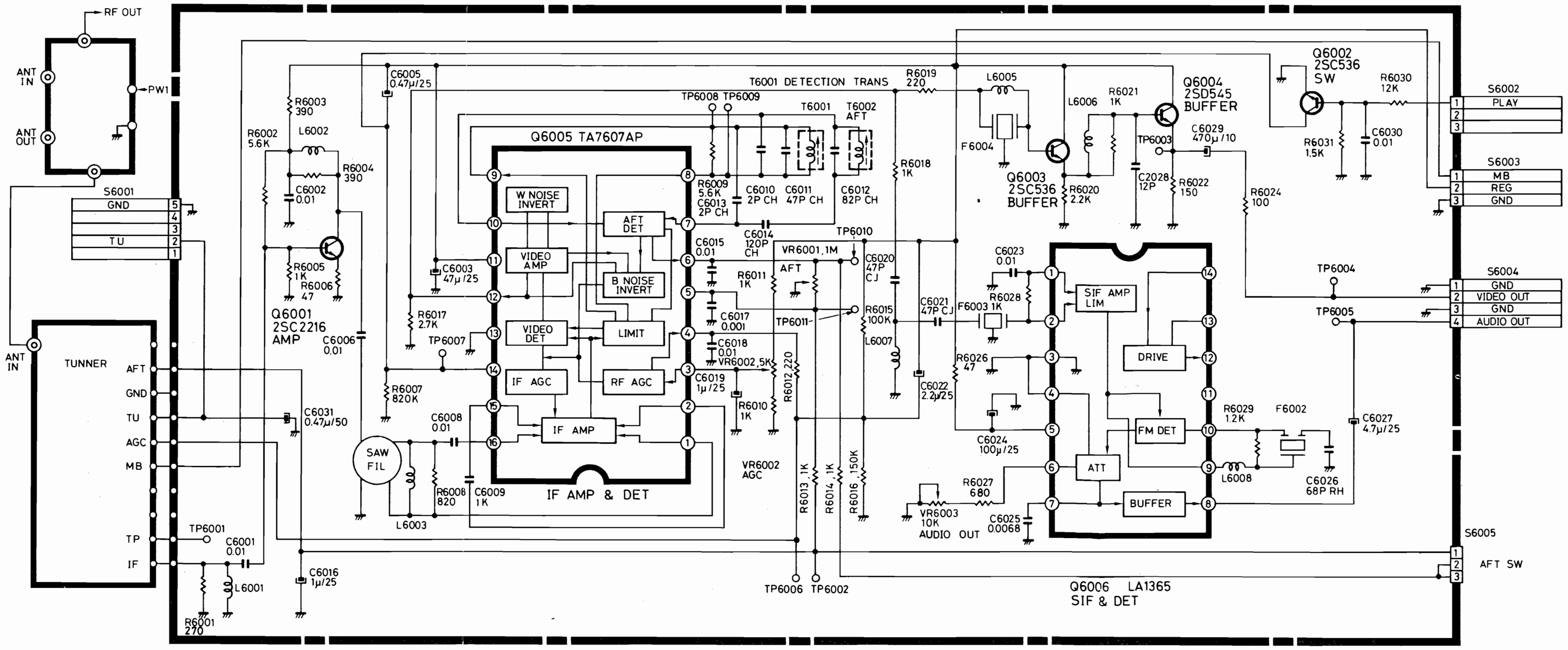

RF OUT
ANT IN
ANT OUT
PW1
S6001
GND 5
SW 4
VB 3
TU 2
UB 1
ANT IN
TUNNER
UB
AFT
GND
TU
AGC
MB
VB
SW
TP
IF
TP6001
C6001 0.01
L6001
R6001 270
C6016 1μ/25
C6031 0.47μ/50
R6002 5.6K
R6003 390
L6002
C6002 0.01
R6004 390
R6005 1K
R6006 47
Q6001 2SC2216 AMP
C6006 0.01
SAW FIL
L6003
R6008 820
C6009 1K
C6008 0.01
R6007 820K
R6017 2.7K
TP6007
C6003 47μ/25
C6005 0.47μ/25
Q6005 TA7607AP
W NOISE INVERT
VIDEO AMP
VIDEO DET
IF AGC
IF AMP
AFT DET
B NOISE INVERT
LIMIT
RF AGC
IF AMP & DET
T6001 DETECTION TRANS
TP6008
TP6009
T6001
T6002 AFT
R6009 5.6K
C6013 2P CH
C6010 2P CH
C6011 47P CH
C6012 82P CH
C6014 120P CH
C6015 0.01
TP6010
VR6001, 1M
AFT
R6011 1K
C6017 0.001
C6018 0.01
VR6002, 5K
C6019 1μ/25
R6010 1K
VR6002 AGC
R6012 220
R6013 1K
R6014 1K
R6016 150K
TP6011
C6020 47P CJ
R6015 100K
L6007
C6022 2.2μ/25
R6018 1K
R6019 220
L6005
F6004
R6021 1K
L6006
Q6004 2SD545 BUFFER
TP6003
C6029 470μ/10
C2028 12P
R6022 150
Q6003 2SC536 BUFFER
R6020 2.2K
R6024 100
C6023 0.01
C6021 47P CJ
F6003
R6028 1K
R6026 47
R6025 560
C6024 100μ/25
R6027 680
VR6003 10K AUDIO OUT
C6025 0.0068
SIF AMP LIM
DRIVE
FM DET
ATT
BUFFER
R6029 1.2K
F6002
L6008
C6026 68P RH
C6027 4.7μ/25
Q6006 LA1365 SIF & DET
TP6006
TP6002
Q6002 2SC536 SW
R6030 12K
R6031 1.5K
C6030 0.01
S6002
PLAY
A-MUTE
A-MUTE
S6003
MB
REG
GND
TP6004
S6004
GND
VIDEO OUT
GND
AUDIO OUT
TP6005
S6005
AFT SW

(South Africa, Australia, New Zealand, Indonesia R6025 560 → OPEN)

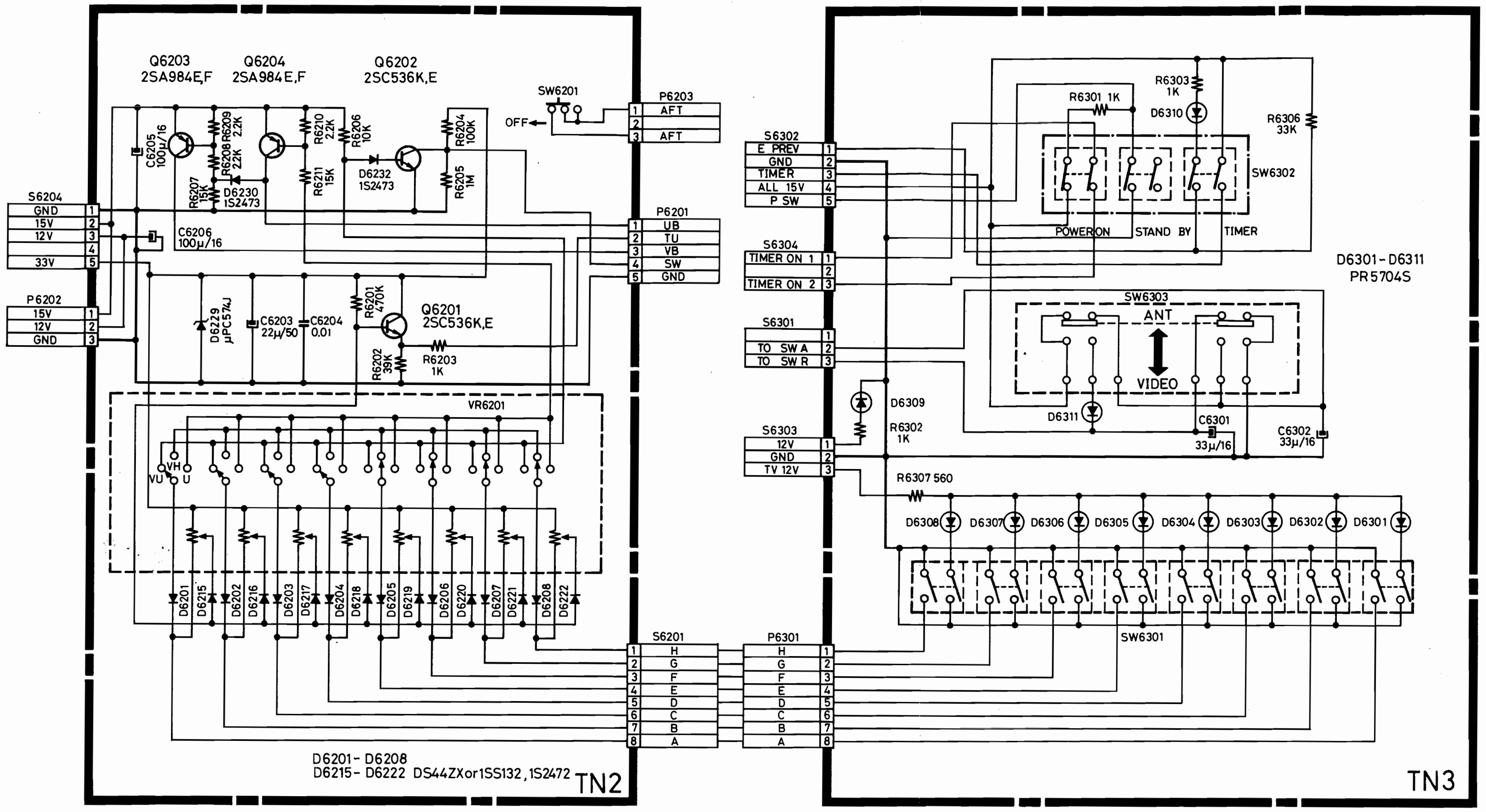
CIRCUIT


Q7001 μCOM44
TIMER μPD552C
CO 2
C1 3
C2 4
C3 5
D0 8
D1 9
D2 10
D3 11
I2 32
I1 31
I0 30
F0 16
F1 17
F2 18
F3 19
H3 29
H2 28
H1 27
H0 26
G3 25
G2 24
G1 23
G0 22
E1 13
E0 12
B3 40
B2 39
B1 38
B0 37
TEST 20
+15V
0
R7026 100K×8
E1
E2
+15V
0V
DAY
D7003
R7016 10K
SW7005 D7004
R7017 10K
SW7002 D7007
CLOCK SET
R7018 10K
REC START
SW7003 D7006
SW7006 D7002 DAY/HOUR
R7019 10K
MIN
SW7004 D7005 REC STOP
SW7007 D7001
R7027 33K
ON
TN3
15
DIGITAL DISPLAY
6,8 a4,d4,e4,g4
9 b4
10 c4
11 f3
12 g3
13 a3
14 b3
15 d3
16 c3
18 e3
19 f2
20 g2
21,22 d2, a2
23 b2
24 e2
25 c2
26 f1
27 g1
28 a1
30 b1
31 e1
32 c1
33 d1
COL 4
G 5
1 F
34 F
AC 2.4

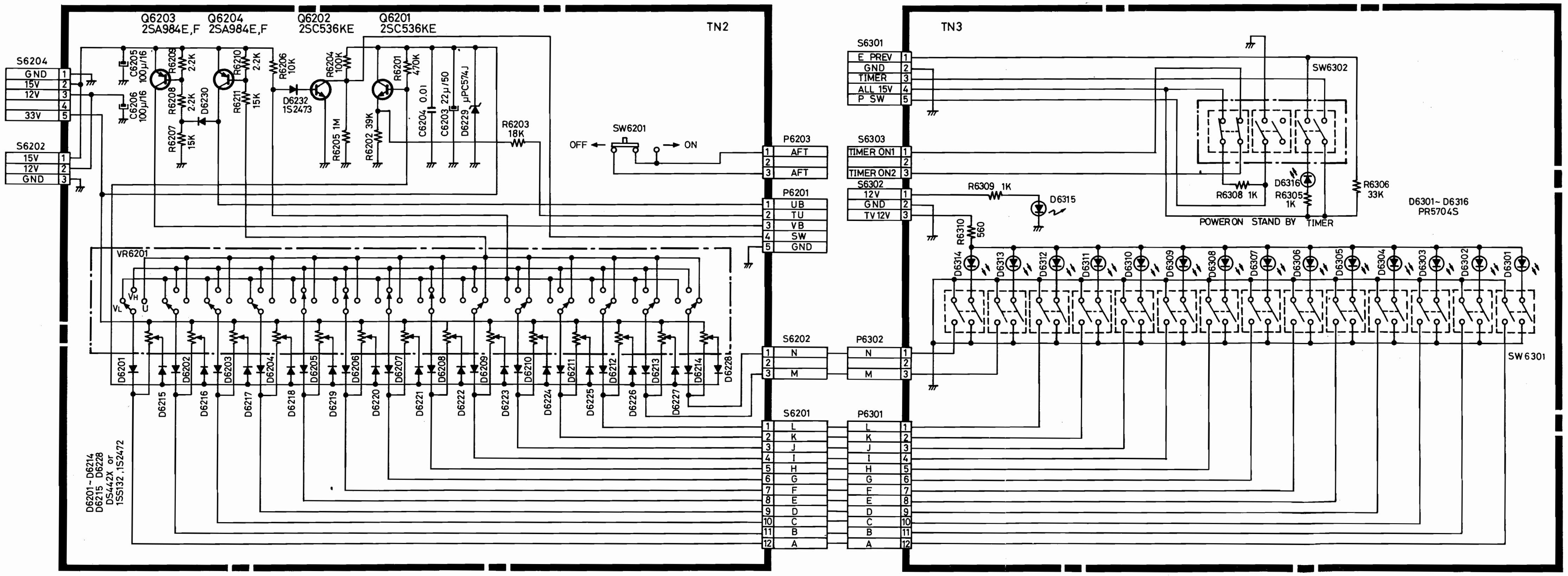
P.C.B. TN-1 IF CIRCUIT (U.K., H.K.)


RF OUT
ANT IN
ANT OUT
PW1
S6001
GND 5
4
3
TU 2
1
ANT IN
TUNNER
AFT
GND
TU
AGC
MB
TP
IF
TP6001
C6001 0.01
L6001
R6001 270
C6016 1μ/25
C6031 0.47μ/50
R6002 5.6K
R6003 390
L6002
C6002 0.01
R6004 390
R6005 1K
R6006 47
Q6001 2SC2216 AMP
C6006 0.01
SAW FIL
L6003
R6008 820
C6009 1K
C6008 0.01
R6007 820K
R6017 2.7K
TP6007
C6003 47μ/25
C6005 0.47μ/25
Q6005 TA7607AP
W NOISE INVERT
VIDEO AMP
VIDEO DET
IF AGC
IF AMP
AFT DET
B NOISE INVERT
LIMIT
RF AGC
IF AMP & DET
T6001 DETECTION TRANS
TP6008 TP6009
T6001
T6002 AFT
R6009 5.6K
C6013 2P CH
C6010 2P CH
C6011 47P CH
C6012 82P CH
C6014 120P CH
C6015 0.01
TP6010
VR6001, 1M
AFT
R6011 1K
C6017 0.001
C6018 0.01
VR6002, 5K
C6019 1μ/25
R6010 1K
VR6002 AGC
R6012 220
R6013 1K
R6014 1K
R6016 150K
TP6011
C6020 47P CJ
R6015 100K
L6007
C6022 2.2μ/25
R6018 1K
R6019 220
L6005
F6004
R6021 1K
L6006
Q6004 2SD545 BUFFER
TP6003
C6029 470μ/10
C2028 12P
R6022 150
Q6003 2SC536 BUFFER
R6020 2.2K
R6024 100
C6023 0.01
C6021 47P CJ
F6003
R6028 1K
R6026 47
C6024 100μ/25
R6027 680
VR6003 10K AUDIO OUT
C6025 0.0068
SIF AMP LIM
DRIVE
FM DET
ATT
BUFFER
R6029 1.2K
F6002
L6008
C6026 68P RH
C6027 4.7μ/25
Q6006 LA1365 SIF & DET
TP6006
TP6002
Q6002 2SC536 SW
R6030 12K
R6031 1.5K
C6030 0.01
S6002
PLAY
S6003
MB
REG
GND
TP6004
S6004
GND
VIDEO OUT
GND
AUDIO OUT
TP6005
S6005
AFT SW

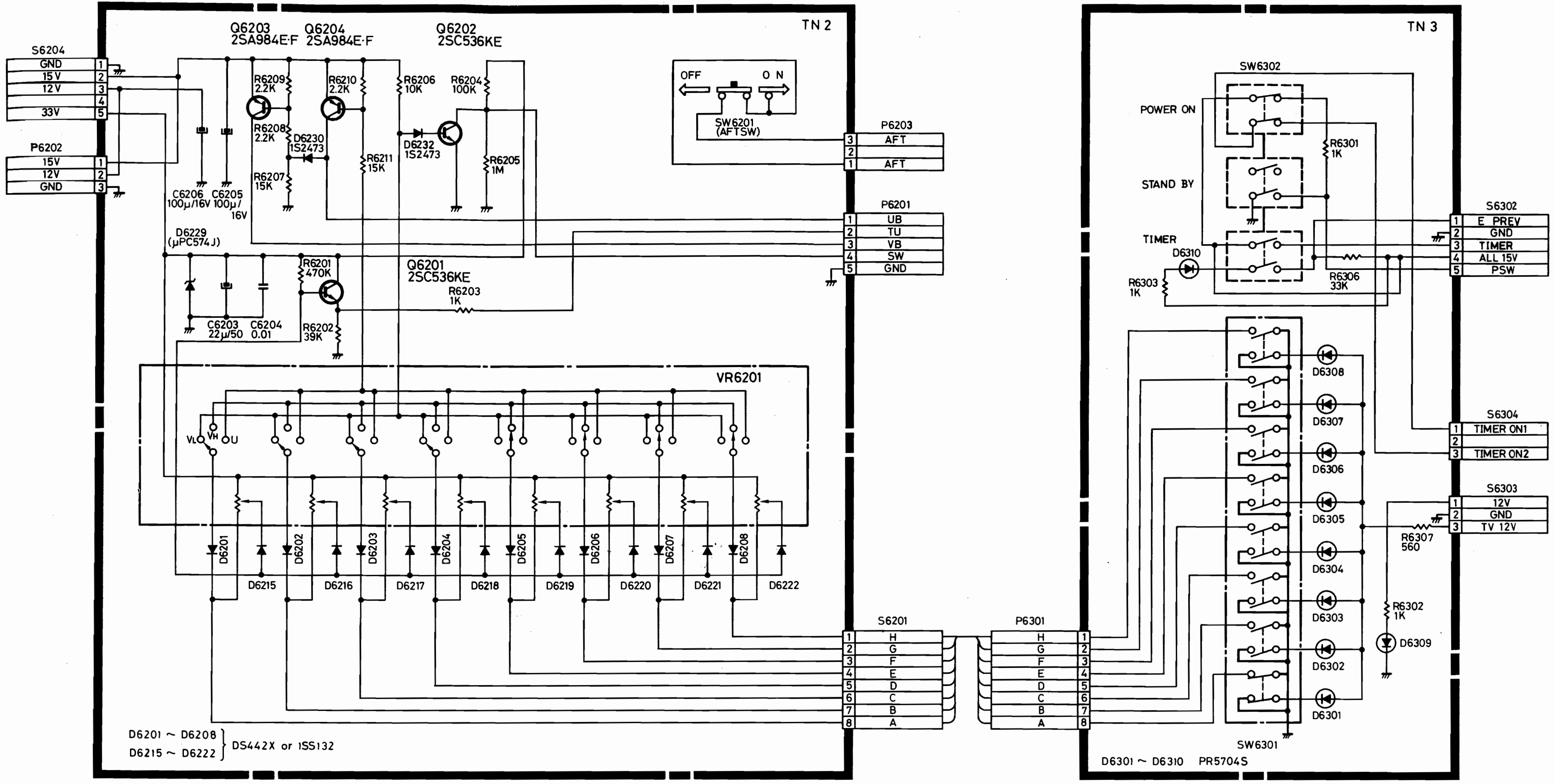
P.C.B. TN-2・3 CHANNEL PRESET/SELECT CIRCUIT (Australia, New Zealand)


Q6203 2SA984E,F
Q6204 2SA984E,F
Q6202 2SC536K,E
Q6201 2SC536K,E
SW6201
OFF
P6203 AFT AFT
S6204 GND 15V 12V 33V
P6202 15V 12V GND
P6201 UB TU VB SW GND
C6205 100μ/16
C6206 100μ/16
C6203 22μ/50
C6204 0.01
D6229 μPC574J
D6230 1S2473
D6232 1S2473
R6201 470K
R6202 39K
R6203 1K
R6204 100K
R6205 1M
R6206 10K
R6207 15K
R6208 22K
R6209 2.2K
R6210 2.2K
R6211 15K
VR6201
VU VH U
D6201 D6215 D6202 D6216 D6203 D6217 D6204 D6218 D6205 D6219 D6206 D6220 D6207 D6221 D6208 D6222
S6201 H G F E D C B A
D6201-D6208
D6215-D6222 DS44ZXor1SS132,1S2472
TN2
S6302 E PREV GND TIMER ALL 15V P SW
S6304 TIMER ON 1 TIMER ON 2
S6301 TO SW A TO SW R
S6303 12V GND TV 12V
P6301 H G F E D C B A
R6301 1K
R6302 1K
R6303 1K
R6306 33K
R6307 560
D6309 D6310 D6311
SW6302
POWER ON STAND BY TIMER
SW6303 ANT VIDEO
C6301 33μ/16
C6302 33μ/16
D6301-D6311 PR5704S
D6308 D6307 D6306 D6305 D6304 D6303 D6302 D6301
SW6301
TN3

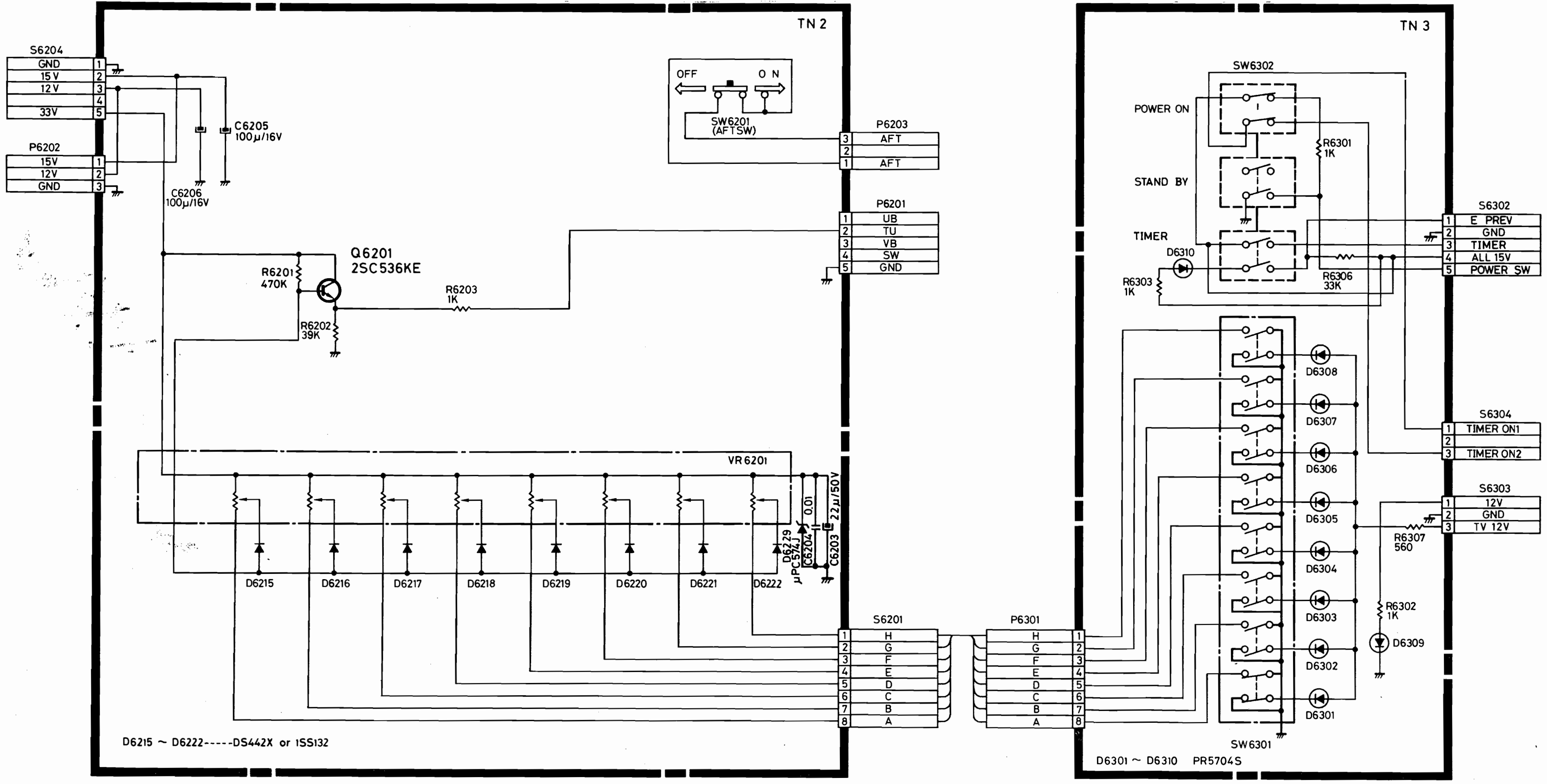
P.C.B. TN-2・3 CHANNEL PRESET/SELECT CIRCUIT (VTC5400PB)


Q6203 2SA984E,F
Q6204 2SA984E,F
Q6202 2SC536KE
Q6201 2SC536KE
TN2
S6204 GND 15V 12V 33V
S6202 15V 12V GND
C6205 100μ/16
C6206 100μ/16
R6209 2.2K
R6208 2.2K
D6230
R6207 15K
R6210 2.2K
R6211 15K
R6206 10K
D6232 1S2473
R6204 100K
R6205 1M
R6201 470K
R6202 39K
C6204 0.01
C6203 22μ/50
D6229 μPC574J
R6203 18K
SW6201
OFF ON
P6203 AFT AFT
P6201 UB TU VB SW GND
VR6201
VL VH U
D6201 D6202 D6203 D6204 D6205 D6206 D6207 D6208 D6209 D6210 D6211 D6212 D6213 D6214 D6228
D6215 D6216 D6217 D6218 D6219 D6220 D6221 D6222 D6223 D6224 D6225 D6226 D6227
D6201-D6214
D6215-D6228
DS442X or
1SS132,1S2472
S6202 N M
P6302 N M
S6201 L K J I H G F E D C B A
P6301 L K J I H G F E D C B A
TN3
S6301 E PREV GND TIMER ALL 15V P SW
S6303 TIMER ON1 TIMER ON2
S6302 12V GND TV 12V
SW6302
R6309 1K
D6315
R6308 1K
D6316
R6305 1K
R6306 33K
POWER ON STAND BY TIMER
D6301-D6316 PR5704S
R6310 560
D6314 D6313 D6312 D6311 D6310 D6309 D6308 D6307 D6306 D6305 D6304 D6303 D6302 D6301
SW6301

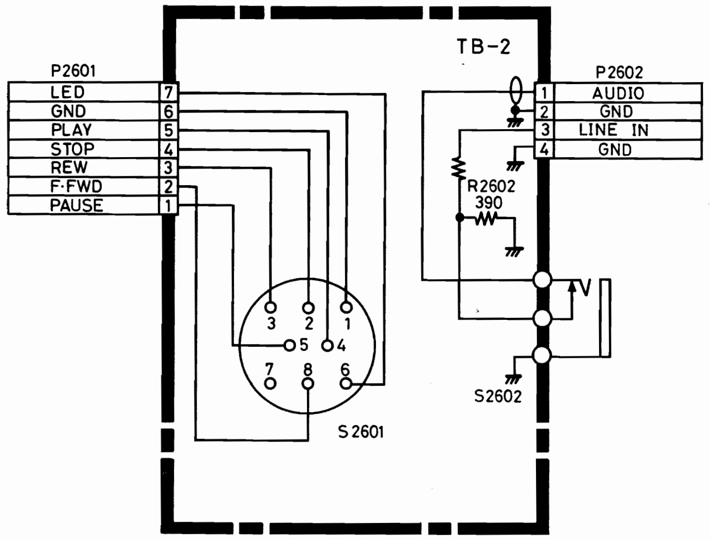
P.C.B. TN-2 · 3 CHANNEL PRESET/SELECT CIRCUIT


TN 2
TN 3
S6204
GND
15V
12V
33V
P6202
15V
12V
GND
Q6203
2SA984E·F
Q6204
2SA984E·F
Q6202
2SC536KE
R6209
2.2K
R6210
2.2K
R6206
10K
R6204
100K
R6208
2.2K
D6230
1S2473
D6232
1S2473
R6211
15K
R6205
1M
R6207
15K
C6206
100µ/16V
C6205
100µ/16V
D6229
(µPC574J)
R6201
470K
Q6201
2SC536KE
R6203
1K
C6203
22µ/50
C6204
0.01
R6202
39K
OFF
ON
SW6201
(AFTSW)
P6203
AFT
AFT
P6201
UB
TU
VB
SW
GND
VR6201
VL
VH
U
D6201
D6202
D6203
D6204
D6205
D6206
D6207
D6208
D6215
D6216
D6217
D6218
D6219
D6220
D6221
D6222
S6201
P6301
H
G
F
E
D
C
B
A
D6201 ~ D6208
D6215 ~ D6222
DS442X or 1SS132
SW6302
POWER ON
STAND BY
TIMER
D6310
R6301
1K
R6303
1K
R6306
33K
S6302
E PREV
GND
TIMER
ALL 15V
PSW
D6308
D6307
D6306
D6305
D6304
D6303
D6302
D6301
D6309
S6304
TIMER ON1
TIMER ON2
S6303
12V
GND
TV 12V
R6307
560
R6302
1K
SW6301
D6301 ~ D6310 PR5704S

P.C.B. TN-2 · 3 CHANNEL PRESET/SELECT CIRCUIT (U.K., H.K.)


TN 2
TN 3
S6204
GND
15V
12V
33V
P6202
15V
12V
GND
C6205
100µ/16V
C6206
100µ/16V
OFF
ON
SW6201
(AFTSW)
P6203
AFT
AFT
P6201
UB
TU
VB
SW
GND
Q6201
2SC536KE
R6201
470K
R6203
1K
R6202
39K
VR6201
D6215
D6216
D6217
D6218
D6219
D6220
D6221
D6222
D6229
µPC574J
C6204
0.01
C6203
22µ/50V
S6201
P6301
H
G
F
E
D
C
B
A
D6215 ~ D6222-----DS442X or 1SS132
SW6302
POWER ON
STAND BY
TIMER
D6310
R6301
1K
R6303
1K
R6306
33K
S6302
E PREV
GND
TIMER
ALL 15V
POWER SW
D6308
D6307
D6306
D6305
D6304
D6303
D6302
D6301
D6309
S6304
TIMER ON1
TIMER ON2
S6303
12V
GND
TV 12V
R6307
560
R6302
1K
SW6301
D6301 ~ D6310 PR5704S

P.C.B. TB-2 TERMINAL CIRCUIT


TB-2
P2601
LED
GND
PLAY
STOP
REW
F·FWD
PAUSE
P2602
AUDIO
GND
LINE IN
GND
R2602
390
S2601
S2602
V

PRODUCT SAFETY NOTICE

The components designated by a symbol (⚠) in this schematic diagram designates components whose value are of special significance to product safety. Should any component designated by a symbol need to be replaced, use only the part designated in the Parts List. Do not deviate from the resistance, wattage and voltage ratings shown.

PARTS LIST

ACCESSORIES

Ref. No.	Parts No.	Description
	143-6-411T-25800	Owner's Manual
	143-6-479T-21600	Channel Pre-set Inst. Label (Germany)
	143-6-479T-21700	Timer Operation Inst. Label (Geramny)
	143-9-4100-43401	Remote Control Unit
	149-016-34	Cassette Tape, L-250
	4-243V-33101	Antenna Output Cable) or
	4-243V-37100	Antenna Output Cable)

NOTE: Parts order must contain Model Number, and Description.

PACKING MATERIALS

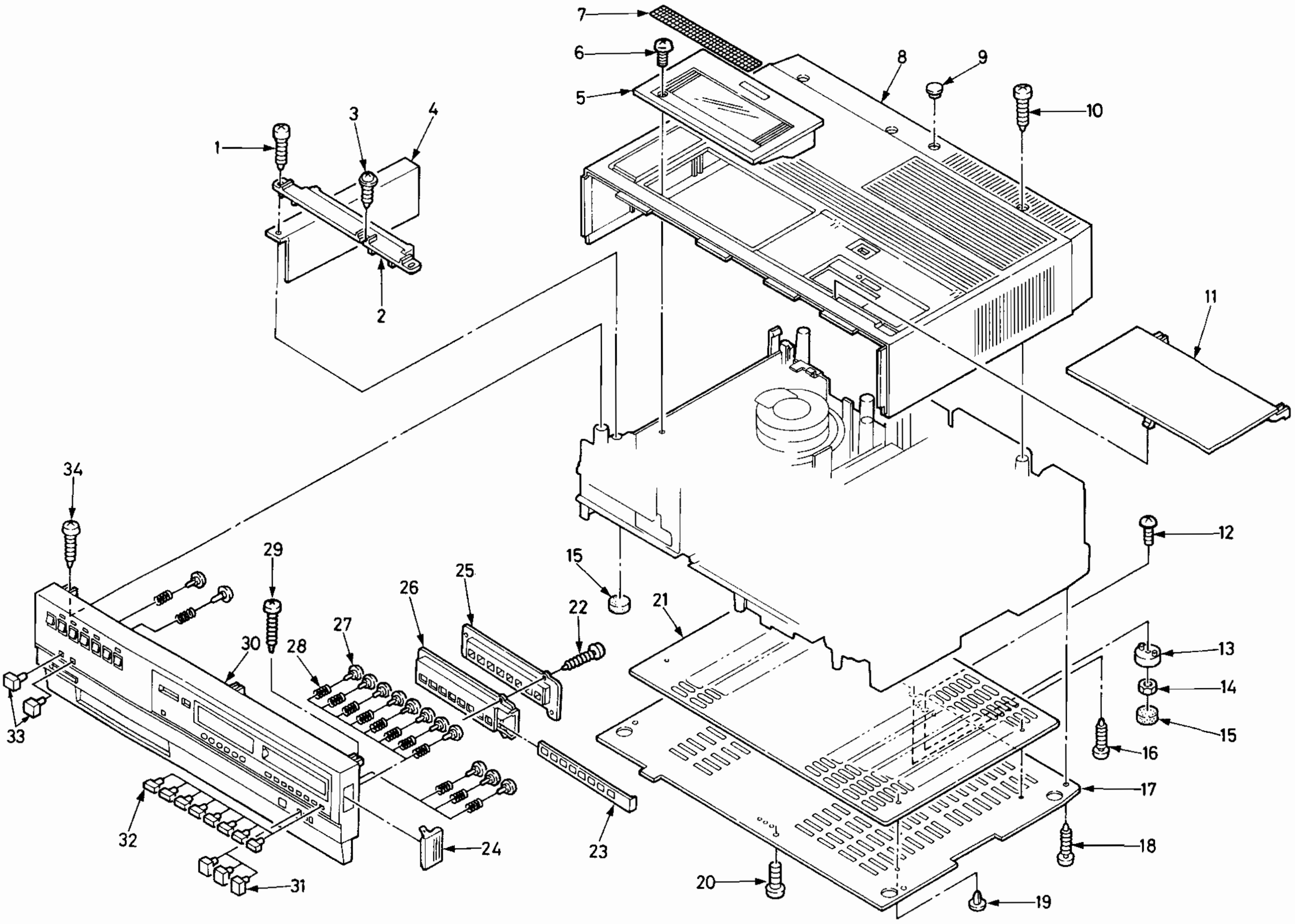
Ref. No.	Parts No.	Description
	143-6-132T-19700	Individual Carton
	143-6-251T-01700	Individual Polyethylene Cover
	143-6-144T-05100	Top Pad, Front & Rear
	143-6-144T-05200	Bottom Pad, Front & Rear
	143-6-316T-05200	Protector Sheet (380 x 95mm), Pads
	143-6-316T-05300	Protector Sheet (555 x 215mm), Front
	143-6-316T-06300	Protector Sheet, Remote Control Unit

CABINET PARTS

Ref. No.	Parts No.	Description
1		Screw, Pan Hd., Tapping, 4x16 mm, Z1
2	143-2-241T-01400	Mechanism Cover
3		Screw, Washer Hd., Tapping, 3 x 16 mm, Z1
4	143-2-327T-06300	Insulator, SV-1 PCB.
5	143-2-135T-19400	Cover, Cassette
6		Screw, Pan Hd., Machine, 3x6 mm, Z1
7	143-2-241T-02000	Veil, Cassette Cover
8	143-9-4200-45400	Cabinet
9	143-2-241T-02700	Rubber Cap. RF Channel Select
10		Screw, Pan Hd., Tapping, 4x20 mm, ZK
11	143-9-4200-44000	Channel Pre-set Compartment Lid
12		Screw, Pan Hd., Machine, 3x4 mm, Z1
13	143-2-174T-02000	Foot, Bottom Lid
14		Hex. Nut, 3 mm
15	143-2-174T-02400	Plastic Cushion (5 used)
16		Screw, Pan Hd., Tapping, 3x16 mm, ZK
17	143-2-125T-03201	Bottom Lid
18		Screw, Pan Hd., Tapping, 4x16 mm, ZK
19	143-2-464T-06500	Fixer (4 used), Bottom Insulation Sheet

Ref. No.	Parts No.	Description
20		Screw, Pan Hd., Machine, 3x6 mm, ZK
21	143-2-327T-05400	Bottom Insulation Sheet
22		Screw, Pan Hd., Tapping, 3x12 mm, Z1
23	143-0-236T-00400	Channel Indicator Panel with Indications
(23)	143-2-236T-01000	Channel Indicator Panel
(23)	143-2-289T-05000	Channel Indicator, 9 pcs.
24	143-2-133T-02600	Compartment Lid, Channel Indicator Panel
25	143-2-365T-09200	Holder (B), Channel Indicator Panel
26	143-2-365T-09400	Holder (A), Channel Indicator Panel
27	143-2-464T-05700	Fixer, Operation Buttons
28	143-2-851T-53900	Spring Coil, Operation Buttons
29		Screw, Pan Hd., Tapping, 4x25 mm, Z1
30	143-0-122T-05900	Front Panel
31	143-2-161T-10900	Push Button (3 used), POWER ON, OFF, TIMER
32	143-2-161T-10400	Channel Button
33	143-2-161T-10600	Lock Button, REC & AUD DUB
34		Screw, Pan Hd., Tapping, 4x20mm, Z1

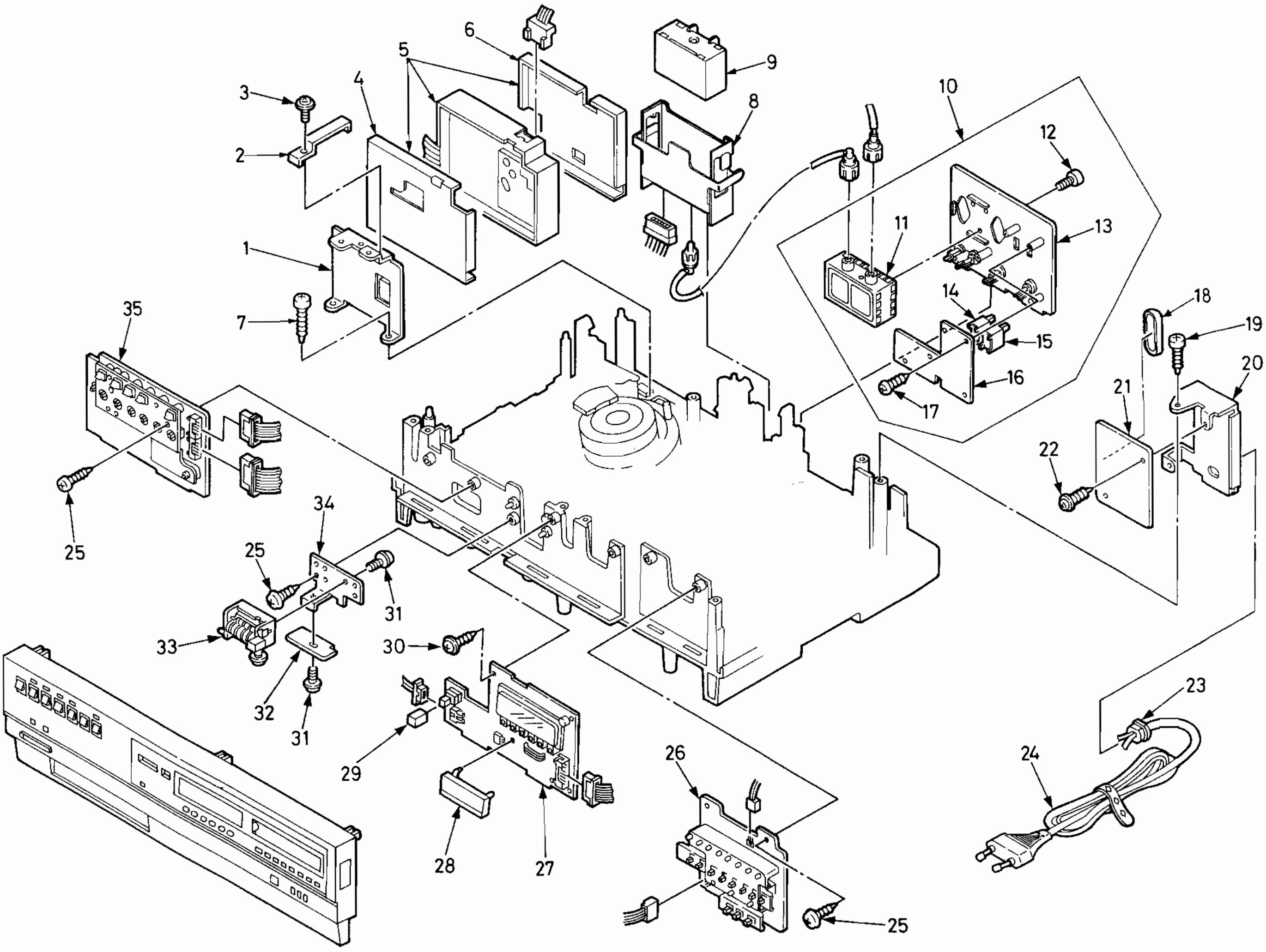
NOTE: Parts order must contain Model Number, and Description.



FRONT CONTROL & REAR TERMINAL PARTS

Ref. No.	Parts No.	Descritpion
1	143-0-351T-07400	Bracket, Mechanism Grounding
2	143-2-351T-47400	Bracket, VP-1 PCB.
3		Screw, Washer Hd., Machine (TP Screw), 3x6 mm, Z1
4	143-2-322T-14800	Shield Plate, VP-1 PCB. Pattern Side
5	143-9-1100-02100	VP-1 Circuit Board Assembly, Video Pre-amp
6	143-2-322T-19600	Shield Plate, VP-1 PCB. Parts Side
7		Screw, Pan Hd., Tapping, 4x25 mm, Z1
8	143-0-351T-08300	Bracket, RF Convertor
9	143-9-4300-48100	RF Convertor
10	143-0-237V-00403	Antenna Terminal Board Assembly
11	4-115V-15200	Antenna Booster
12		Screw, Pan Hd., Machine, 3x6 mm, ZK
13	4-237V-16800	Antenna Terminal Board
14	4-231V-19900	Slide Switch, TEST SIGNAL ON/OFF
15	4-231V-19800	Slide Switch, TUNER/EXT. IN
16	4-226V-85502	P.C. Board, Antenna Terminal
17		Screw, Pan Hd., Tapping, 3x8 mm, Z1
18	143-2-135T-16300	Insulation Cover, PW-2 PCB.
19		Screw, Pan Hd., Tapping, 4x16 mm, Z1
20	143-2-367T-04001	Bracket, Power Cord
21	143-9-0500-04200	PW-2 Circuit Board Assembly, AC Power Supply
22		Screw, Washer Hd., Tapping, 3x6 mm, Z1
23	143-2-464T-02700	Fixer, Power Cord
24	⚠ 4-243V-12710	Power Cord
or	⚠ 4-243V-13900	Power Cord
25		Screw, Pan Hd., Tapping, 3x10 mm, Z1
26	143-9-0600-03300	TN-3 Circuit Board Assembly, Channel Select
27	143-9-0700-04200	TM-1 Circuit Board Assembly, Timer
28	143-2-351T-48400	Bracket, TM-1 PCB.
29	143-2-161T-10700	MEMORY ON/OFF Button
30		Screw, Washer Hd., Tapping, 3x10 mm, Z1
31		Screw with Spring & Flange Washer, Pan Hd., Machine, 3x6 mm, Z1
32	143-9-1300-00200	MC-1 Circuit Board Assembly, Counter
33	143-2-811T-00900	Counter
34	143-2-812T-02700	Bracket, Counter
35	143-9-0300-08100	SY-2 Circuit Board Assembly, Operation

NOTE: Parts order must contain Model Number, and Description.

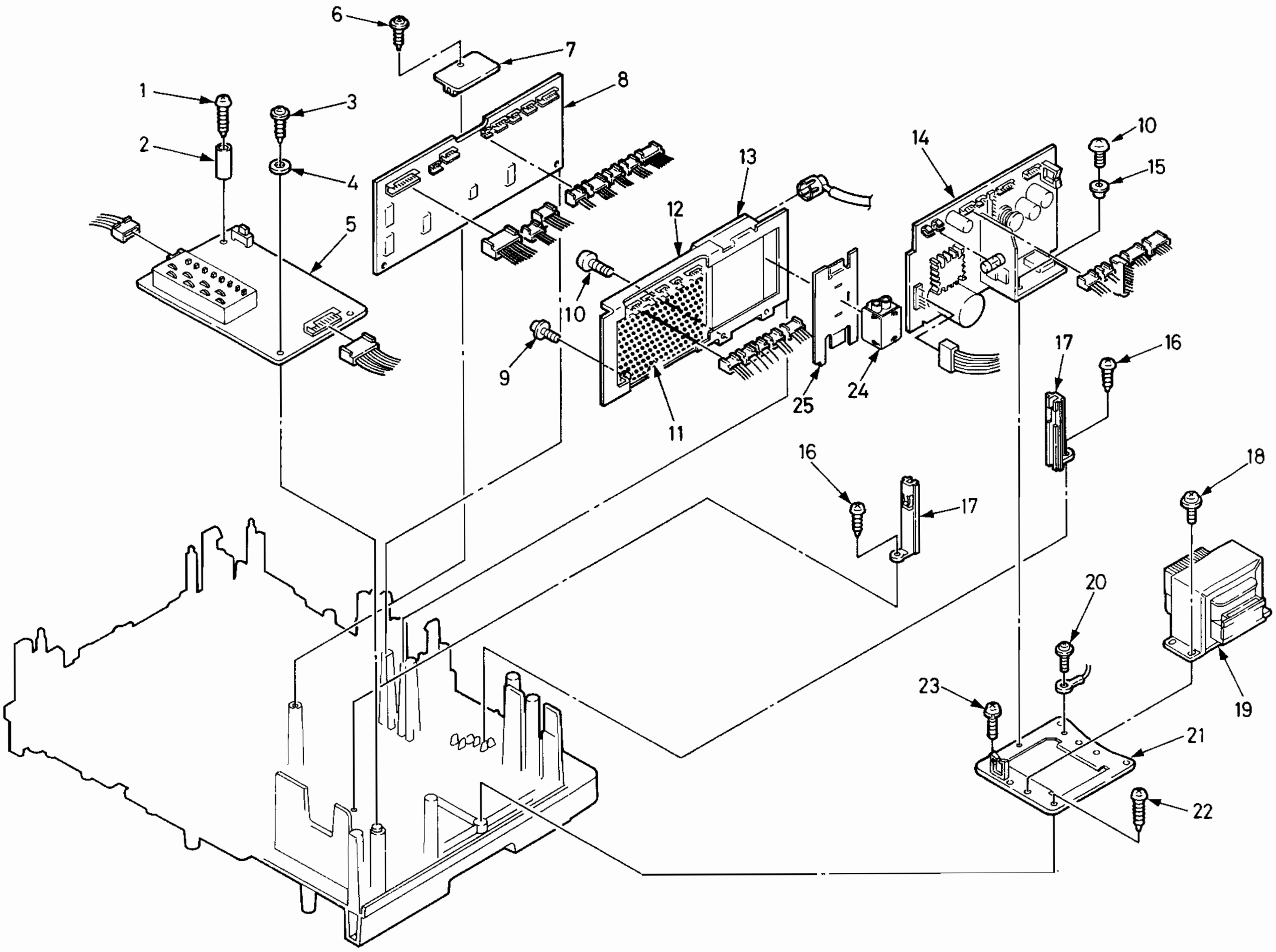


RIGHT SIDE PCB's PARTS

Ref. No.	Parts No.	Description
1		Screw, Pan Hd., Tapping, 3x25 mm, Z1
2	143-2-461T-03300	Reinforcement Pipe, Cabinet
3		Screw, Washer Hd., Tapping, 3x16 mm, Z1
4	141-2-453T-01700	Fiber Washer, 3x10x1 mm
5	143-9-0600-03200	TN-2 Circuit Board Assembly, Channel Pre-set
6		Screw, Washer Hd., Tapping, 3x10 mm, Z1
7	143-2-377T-13900	Bracket, SV-4 PCB.
8	143-9-0400-03600	SV-4 Circuit Board Assembly, Servo "2"
9		Screw, Washer Hd., Machine (TP-S tight), 3x6 mm, Z1
10		Screw, Pan Hd., Machine (S tight), 3x6 mm, Z1
11	143-9-0600-07300	TN-1 Circuit Board Assembly, I.F.
or	143-9-0600-07301	TN-1 Circuit Board Assembly, I.F.
12	143-2-312T-07900	Frame, Tuner & TN-1 PCB.

Ref. No.	Parts No.	Description
13	4-115V-16700	Tuner
14	143-9-0500-06100	PW-1 Circuit Board Assembly, DC Power Supply
15	143-2-683T-11400	Insulation Boss, PW-1 PCB.
16		Screw, Pan Hd., Tapping, 4x10 mm, Z1
17	143-2-377T-12200	Bracket, PCB.
18		Screw, Washer Hd., Machine (TP Screw), 4x8 mm, Z1
19	⚠ 4-251V-24900	Power Transformer
or	⚠ 4-251V-25000	Power Transformer
20		Screw, Washer Hd., Machine (TP Screw), 3x6 mm, Z1
21	143-2-371T-00401	Bracket, Power Transformer
22		Screw, Pan Hd., Tapping, 4x16 mm, Z1
23		Screw with Spring Washer, Pan Hd., Machine, 4x20 mm, Z1
24	4-282V-11400	Antenna Trans., High Pass Filter
25	143-2-351T-53000	Bracket, Antenna Trans.

NOTE: Parts order must contain Model Number, and Description.

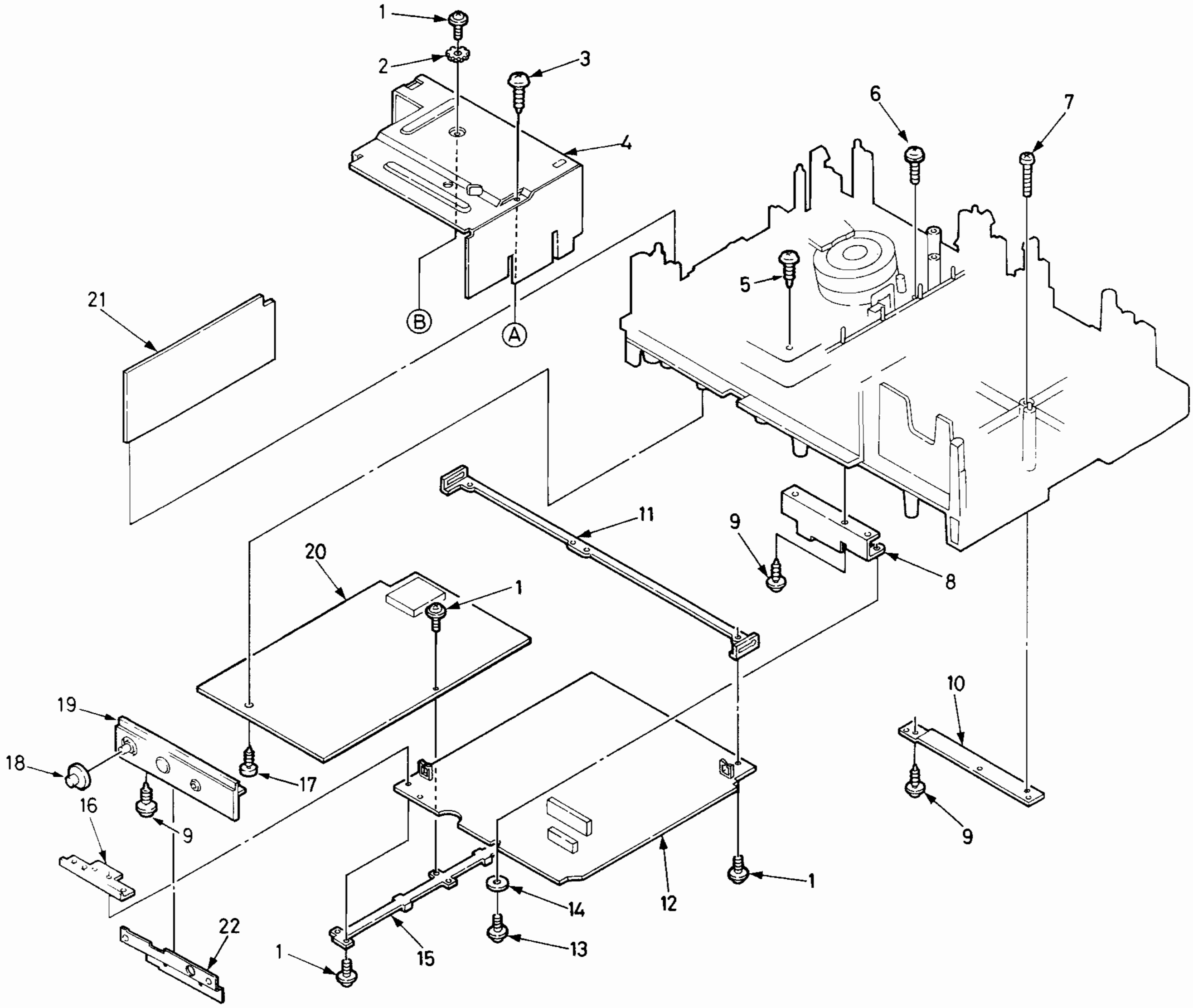


BOTTOM & LEFT SIDE PCB.'s PARTS

Ref. No.	Parts No.	Description
1		Screw, Washer Hd., Machine (TP Screw), 3x6 mm, Z1
2		Lock Washer, External Toothed, 3 mm, Z1
3		Screw, Pan Hd., Tapping, 4x16 mm, Z1
4	143-0-322T-01900	Shield Plate, Top
5		Screw, Pan Hd., Tapping, 4x20 mm, Z1
6		Screw with Spring Washer, Pan Hd., Machine, 4x20 mm, Z1
7		Screw, Pan Hd., Machine, 4x20 mm, ZK
8	143-2-351T-42600	Bracket, PCB.
9		Screw, Washer Hd., Tapping, 3x10 mm, Z1
10	143-2-351T-42700	Grounding Plate, Mechanism

Ref. No.	Parts No.	Description
11	143-2-377T-12300	Bracket (A), PCB. Shaft
12	143-9-0100-06300	VD-2 Circuit Board Assembly, Video & System Control
13		Screw, Washer Hd., Machine (TP Screw), 3x6 mm, ZR
14	141-2-453T-01700	Fiber Washer, 3x10x1 mm
15	143-2-377T-12400	Bracket (B), PCB.'s Joiner
16	143-2-377T-13800	PCB. Bracket, Reinforcement
17		Screw, Pan Hd., Tapping, 4x16 mm, ZR
18	143-2-163T-02700	Tracking Control Knob
19	143-9-4300-49700	Front Input Terminal (TB-2) Assembly
20	143-9-0100-06700	VD-1 Circuit Board Assembly, Video & Audio
21	143-9-0400-03500	SV-1 Circuit Board Assembly, Servo "1"
22	143-2-315T-02000	Reinforcement, Front Input Terminal

NOTE: Parts order must contain Model Number, and Description.

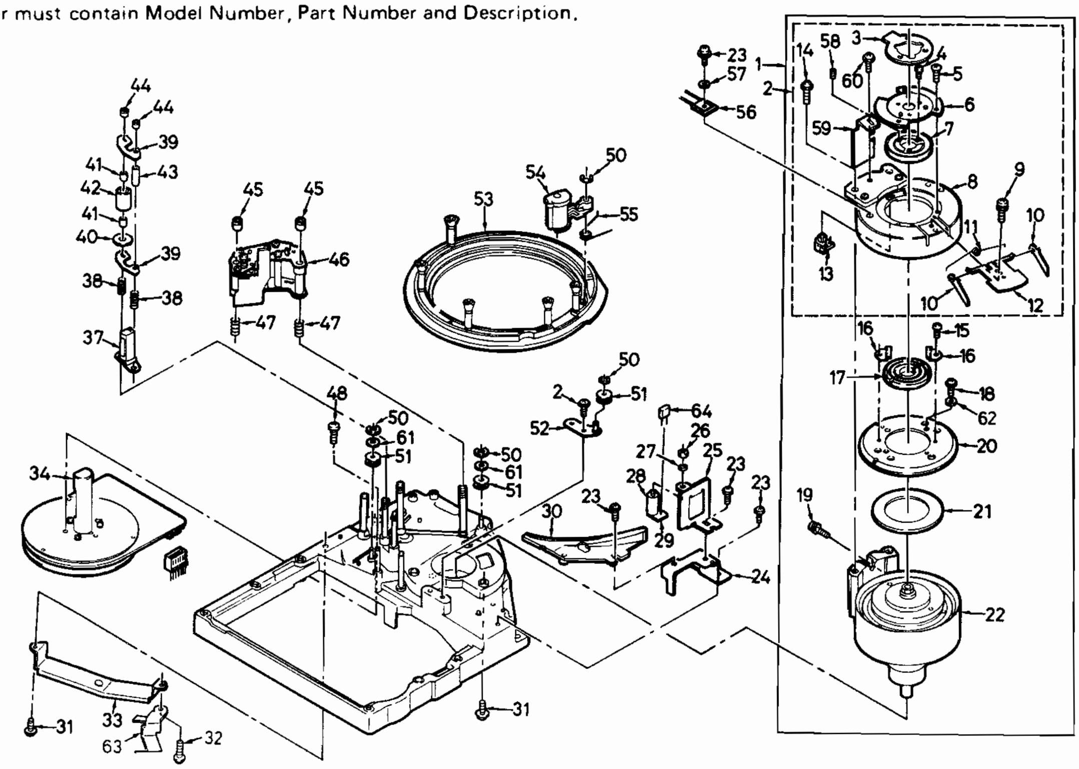


DRUM, CAPSTAN & PINCH ROLLER PARTS

Ref. No.	Part No.	Description
1	143-9-5100-36600	Drum Complete
2	143-0-771T-02400	Upper Drum Complete
3	4-226V-75350	Wiring PCB.
4		Screw, Pan Hd., Machine, 2.6x3 mm, Z1
5		Screw, Pan Hd., Machine, 2.6x6 mm, Z1
6	143-2-351T-43500	Bracket, Upper Rotary Trans.
7	143-0-260V-00400	Rotary Trans., Upper
8	143-2-776T-01250	Upper Drum
9		Screw with Spring Washer & Washer, Pan Hd., Machine, 3x6 mm, Z1
10	143-2-741T-34300	Tape Path Lever (2 used)
11	143-2-851T-56901	Spring Coil, Tape Path Lever
12	143-2-747T-05600	Bracket, Tape Path Lever
13	4-264V-14100	P.G. Coil
14		Screw with Washer, Pan Hd., Machine, 4x12 mm, Z1
15		Screw, Pan Hd., Machine, 2.6x4 mm, Z1
16	143-2-371T-00500	Bracket (2 used), Lower Rotary Trans. Fix
17	4-260V-00600	Lower Rotary Trans.
18		Screw, Pan Hd., Machine, 3x6 mm, Z1
19		Screw with Spring Washer & Washer, Pan Hd., Machine, 3x8 mm, Z1
20	143-0-242V-01700	Video Head Disk
21	143-2-772T-02600	Spacer, V-head Adj., 0.02 mm Dia
or	143-2-772T-02700	Spacer, V-head Adj., 0.04 mm Dia
or	------------------------------	Not use.
22	143-0-771T-02100	Lower Drum Complete
23		Screw with Spring & Flange Washer, Pan Hd., Machine, 3x8mm, Z1
24	143-2-351T-44800	Bracket, Pinch Lever Guide
25	143-2-351T-44700	Bracket, REW Sensor
26		Hex. Nut, 3 mm
27		Spring Washer, 3 mm
28	4-258V-13500	REW Sensor
29	4-226V-88500	MC-3 PCB.
30	143-2-351T-44100	Cover, Pinch Roller Lever Guide

Ref. No.	Part No.	Description
31		Screw with Spring & Flange Washer, Pan Hd., Machine, 3x8 mm, Z1
32		Screw with Spring & Flange Washer, Pan Hd., Machine, 3x16 mm, Z1
33	143-2-351T-46700	Bracket, Capstan Motor
34	4-527V-50700	Capstan Motor
37	143-0-242V-01800	Erase Head
38	143-2-851T-51000	Spring Coil (2 used), Erase Head
39	143-2-821T-07400	Tape Guide (2 used), Erase Head
40	143-2-457T-04600	Special Washer, Erase Head
41	143-2-683T-08300	Sleeve (2 used), Erase Head Roller
42	143-0-662T-00800	Roller, Erase Head
43	143-2-821T-06701	Tape Guide Shaft, Erase Head
44	143-2-421T-03400	Special Nut (2 used), Erase Head
45	143-2-421T-03200	Special Nut (2 used), Audio/Control Head
46	143-0-242V-01900	Audio/Control Head Assembly
47	143-2-851T-56800	Spring Coil (2 used), Audio/Control Head
48		Screw, Washer Hd., Machine (TP Screw) 3x10mm, Z1
50		"E" Ring, 2.3 mm
51	143-2-662T-09200	Guide Roller (3 used), Loading Ring
52	143-0-351T-07500	Bracket, Loading Ring Guide Roller
53	143-0-683T-00250	Loading Ring
54	143-0-545T-01701	Pinch Roller
55	143-2-851T-55600	Spring Coil, Pinch Roller
56	4-221V-11500	DEW Sensor
57		Fiber Washer, 3x8x0.5 mm
58		Set Screw, Hex. Socket Hd., Machine (Flat Point), 2.6x4 mm, CP
59	143-2-322T-20600	Shield Plate, R/P Head
60		Screw, Washer Hd., Machine (TP Screw), 3x4 mm, Z1
61	141-2-453T-30300	Washer, 3x5.4x0.13 mm
62	143-2-457T-06800	Special Washer
63	143-0-764T-00300	Brush, Discharge
64		Polypropylene Capacitor, 3300pF, ±2%, 100V

NOTE: Parts order must contain Model Number, Part Number and Description.

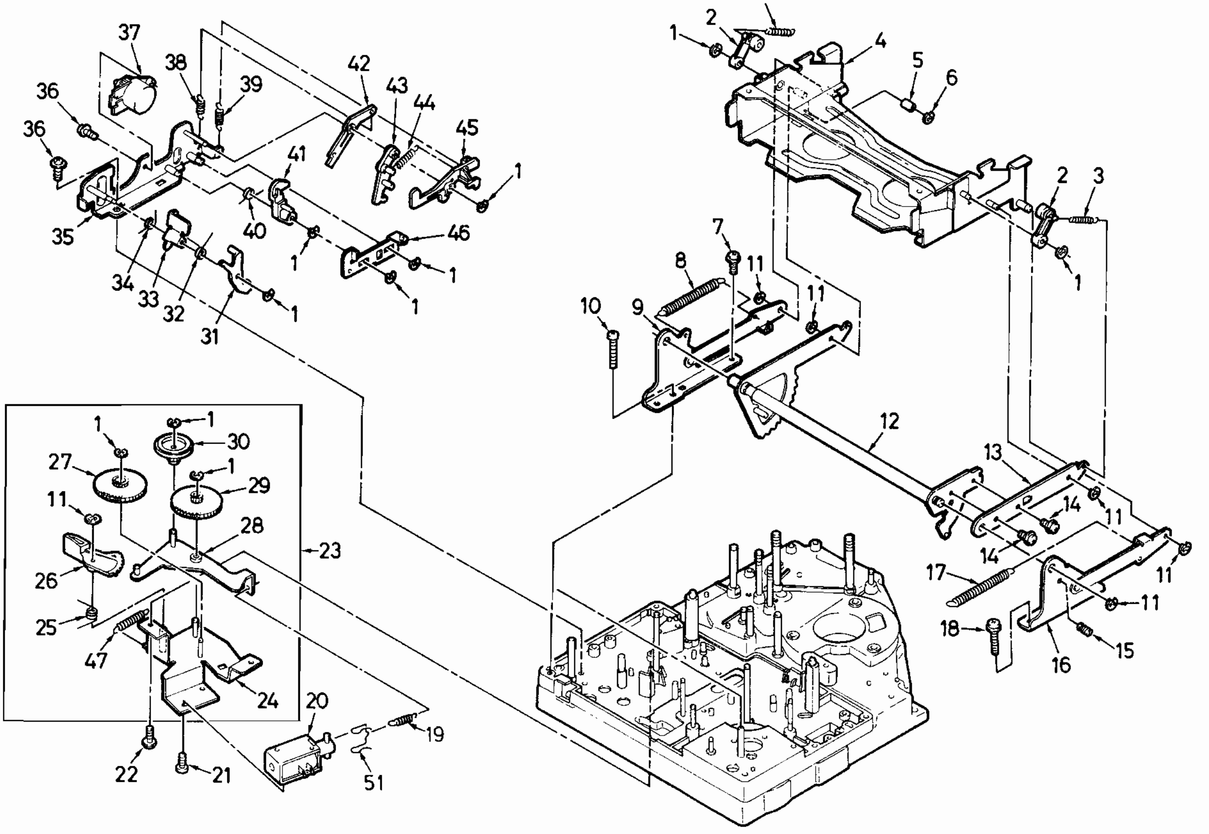


CASSETTE HOLDER MECHANISM PARTS

Ref. No.	Part No.	Description
1		"E" Ring, 2.3 mm
2	143-2-741T-32900	Lever (2 used), Cassette Hold
3	143-2-851T-55000	Spring Coil (2 used), Cassette Hold
4	143-0-351T-06900	Cassette Holder
5	143-2-662T-08900	Roller, Cassette Holder Lock
6		"E" Ring, 1.5 mm
7		Screw, Washer Hd., Tapping (B-tight), 3x10 mm, Z1
8	143-2-851T-54900	Cassette-up Spring Coil, Left Side
9	143-0-351T-07000	Cassette Holder Stand, Left Side
10		Screw, Washer Hd., Machine (TP Screw), 3x18 mm, Z1
11		"E" Ring, 3 mm
12	143-0-751T-01500	Shaft, Cassette-up
13	143-2-741T-32700	Bracket, Cassette-up
14		Screw, Washer Hd., Machine (TP Screw), 3x4 mm, Z1
15	143-2-421T-04400	Adjustment Screw, Cassette-up
16	143-0-351T-07100	Cassette Holder Stand, Right Side
17	143-2-851T-54800	Cassette-up Spring Coil, Right Side
18		Screw with Spring Washer & Washer, Pan Hd., Machine, 3x24 mm, Z1
19	143-2-851T-57601	Spring Coil, Operation "EJECT"
20	4-264V-12900	Solenoid, Operation "EJECT"
21		Screw with Spring & Flange Washer, Pan Hd., Machine, 2.6x4 mm, Z1
22		Screw, Washer Hd., Tapping (B-tight), 3x6 mm, Z1
23	143-0-581T-01800	Gear Assembly, Operation "EJECT"
24	143-0-351T-07700	Gears Base, Operation "EJECT"
25	143-2-851T-57800	Release Spring Coil, "EJECT" Drive Lever

Ref. No.	Part No.	Description
26	143-2-741T-36301	Lever, "EJECT" Drive
27	143-2-581T-04600	1 st. Gear, "EJECT" Drive
28	143-0-741T-18800	Lever, "EJECT" Drive Gears
29	143-2-581T-04500	2 nd. Gear, "EJECT" Drive
30	143-0-581T-01700	Gear, Operation "EJECT"
31	143-2-741T-35400	Lock Lever, "EJECT"
32	143-2-851T-57400	Spring Coil, "EJECT" Lock Lever
33	143-2-741T-35500	Release Lever, "EJECT" Lock Lever
34	143-2-851T-57300	Spring Coil, Return for Release Lever
35	143-0-351T-07900	Bracket, Cassette-up Damper
36		Screw, Washer Hd., Tapping (B-tight), 3x8 mm, Z1
37	143-0-774T-00501	Oil Damper
38	143-2-851T-57000	Spring Coil, Stopper Lever
39	143-2-851T-57100	Spring Coil, Cassette Actuate Lever
40	143-2-851T-56500	Spring Coil, Cassette Holder Lock Lever
41	143-2-741T-35000	Lever, Cassette Holder Lock
42	143-2-741T-34900	Stopper Lever, Cassette Holder Lock Lever
43	143-2-741T-34700	Operation Lever, Cassette Switch
44	143-2-851T-57200	Spring Coil, Operation Lever
45	143-2-741T-34800	Lever, Cassette Actuator
46	143-0-731T-01300	Release Slide, Loading Ring Stopper
47	143-2-851T-57700	Spring Coil, "EJECT" Drive
51	143-2-852T-05400	Spring Wire, Operation "EJECT"

NOTE: Parts order must contain Model Number, Part Number and Description.

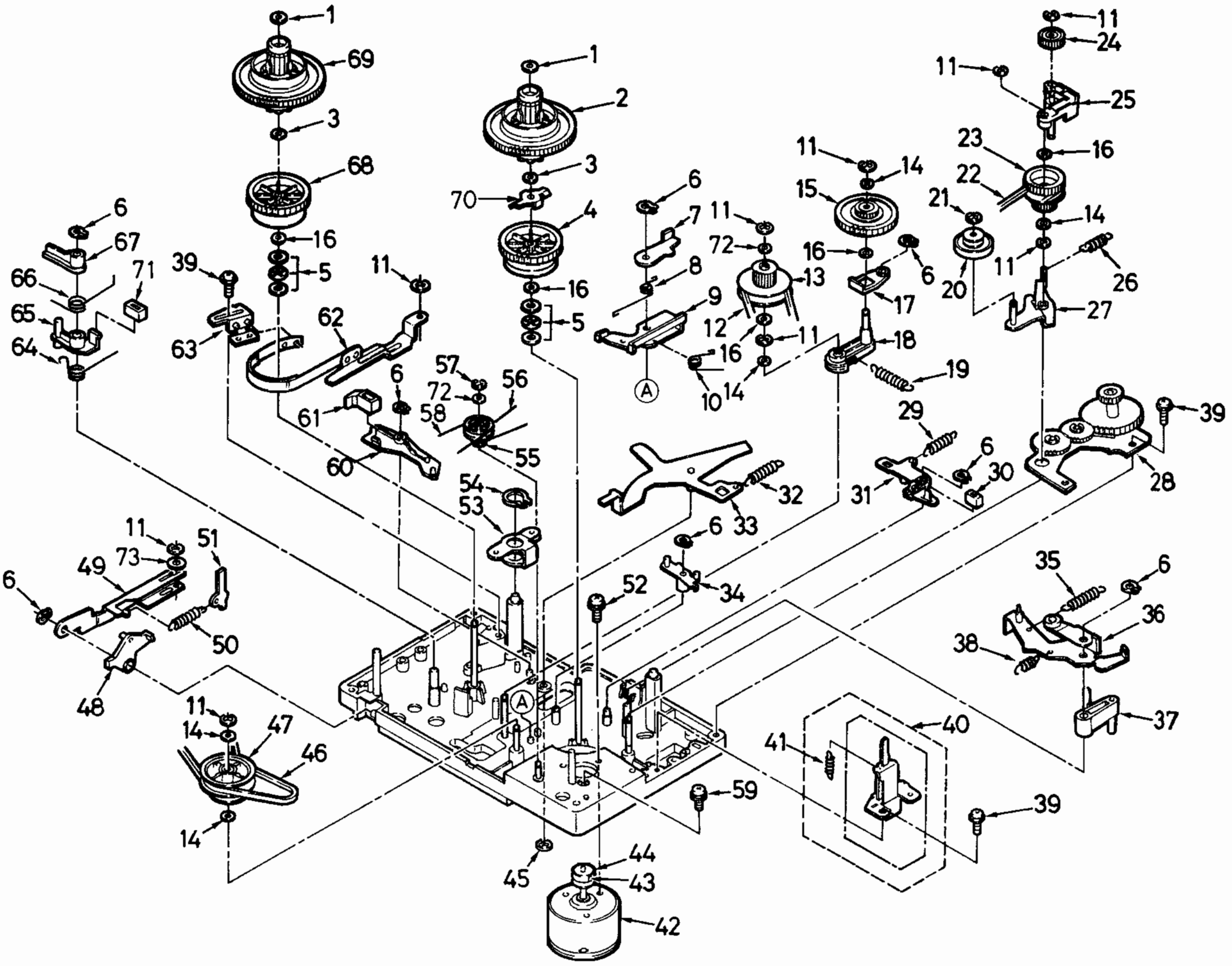


REEL DRIVE MECHANISM PARTS

Ref. No.	Part No.	Description
1	143-2-457T-05901	Stopper (2 used), Reel Bases
2	143-0-531T-02700	Take-up Reel Base
3	141-2-453T-30300	Washer, 3x5.4x0.13 mm(Reel Base Hight Adj.)
or	141-2-453T-30301	Washer, 3x5.4x0.25 mm (Reel Base Hight Adj.)
or	141-2-453T-30302	Washer, 3x5.4x0.5 mm (Reel Base Hight Adj.)
4	143-2-581T-03700	Gear, Take-up Reel Lower
5	143-2-574T-02800	Beering (2 used), Reel Bases
6		Grip Ring, 3 mm
7	143-0-741T-19300	Back Tension Lever, R-search
8	143-2-851T-58400	Spring Coil, R-search B.T. Lever
9	143-2-741T-36700	Operation Lever, R-search B.T. Lever
10	143-2-851T-58500	Spring Coil, Operation Lever
11		"E" Ring, 2.3 mm
12	143-2-564T-02500	2 nd. Square Belt
13	143-0-581T-01600	Relay Gear, Reel Drive (Center Gear)
14	141-2-453T-30301	Washer, 3x5.4x0.25mm
15	143-0-581T-01500	Reel Drive Gear (Idler Gear)
16	141-2-453T-30302	Washer, 3x5.4x0.5 mm
17	143-2-253T-06100	Select Link, Reel Drive Gear
18	143-2-741T-32500	Lever, Reel Drive Gear
19	143-2-851T-56000	Spring Coil, Reel Drive Gear
20	143-0-661T-03800	Loading Roller
21		"E" Ring, 2 mm
22	143-2-564T-02301	Square Belt, Loading Belt
23	143-2-581T-03800	Loading Gear "1"
24	143-2-581T-04200	Loading Gear "2"
25	143-0-741T-19100	Lever, Loading Gear "2"
26	143-2-851T-56400	Spring Coil, Loading Roller Pressure
27	143-0-741T-18900	Lever, Loading Roller
28	143-0-581T-02000	Loading Gear, Loading Ring Drive
29	143-2-851T-56200	Spring Coil, Take-up Reel Brake Pressure
30	143-2-712T-02800	Brake Shoe, Take-up Reel
31	143-0-741T-19600	Lever, Take-up Reel Brake
32	143-2-851T-56100	Spring Coil, Brake Operation Lever
33	143-0-741T-18100	Operation Lever, Brake
34	143-2-741T-33200	Operation Lever, Loading Gear
35	143-2-851T-55800	Spring Coil, Loading End Detector Lever
36	143-0-741T-18300	Detector Lever, Loading End
37	143-2-741T-33700	Loading End Lever
38	143-2-851T-55700	Spring Coil, Gear Select
39		Screw, Washer Hd., Tapping (B-tight), 3x8 mm, Z1
40	143-0-351T-08100	Erase Prevention Detector Block
41	143-2-851T-58200	Spring Coil, Erase Prevention
42	4-529V-10800	Reel Motor
43		Set Screw, Hex. Socket Hd., Machine, (Dented point), 2.6x4 mm, CP
44	143-2-661T-68300	Reel Motor Pulley
45		"E" Ring, 3 mm
46	143-2-564T-02600	1 st. Square Belt
47	143-0-661T-03700	Relay Pulley, Reel Motor
48	143-2-741T-35800	Lever, "EJECT"
49	143-2-253T-06200	Link, "EJECT"
50	143-2-851T-55500	Spring Coil, Cassette Lock Release
51	143-2-741T-34200	Release Lever, Cassette Lock
52		Screw with Spring & Flange Washer, Pan Hd., Machine, 2.6x8 mm, Z1
53	143-0-741T-18200	Loading Ring Stopper Lever, Unloading Detect
54		Grip Ring, 8 mm
55	143-2-661T-68200	Counter Pulley

Ref. No.	Part No.	Description
56	143-2-564T-02400	Square Belt
57		"E" Ring, 1.5 mm
58	143-2-564T-02700	Square Belt, Counter Belt
59		Screw with Spring Washer & Washer, Pan Hd., Machine, 2.6x6 mm, Z1
60	143-2-741T-37100	Brake Lever, Supply Reel
61	143-2-712T-02500	Brake Shoe, Supply Reel
62	143-0-711T-00400	Brake Band, Back Tension
63	143-2-351T-43700	Bracket, Back Tension Brake Band
64	143-2-851T-55900	Spring Coil, "EJECT" Brake Lever
65	143-2-741T-33500	Lever, "EJECT" Brake
66	143-2-851T-58000	Spring Coil, Supply Soft Brake
67	143-2-741T-35200	Brake Lever, Supply Soft Brake
68	143-2-581T-03600	Gear, Supply Reel Lower
69	143-0-531T-02600	Supply Reel Base
70	143-2-853T-07200	Spring Plate, Take-up Reel
71	143-2-712T-02300	Brake Shoe, EJECT Brake
72	141-2-453T-30100	Washer, 2.1x4x0.13mm
73		Washer, 3x6x0.5mm, Z1

NOTE: Parts order must contain Model Number, Part Number and Description.

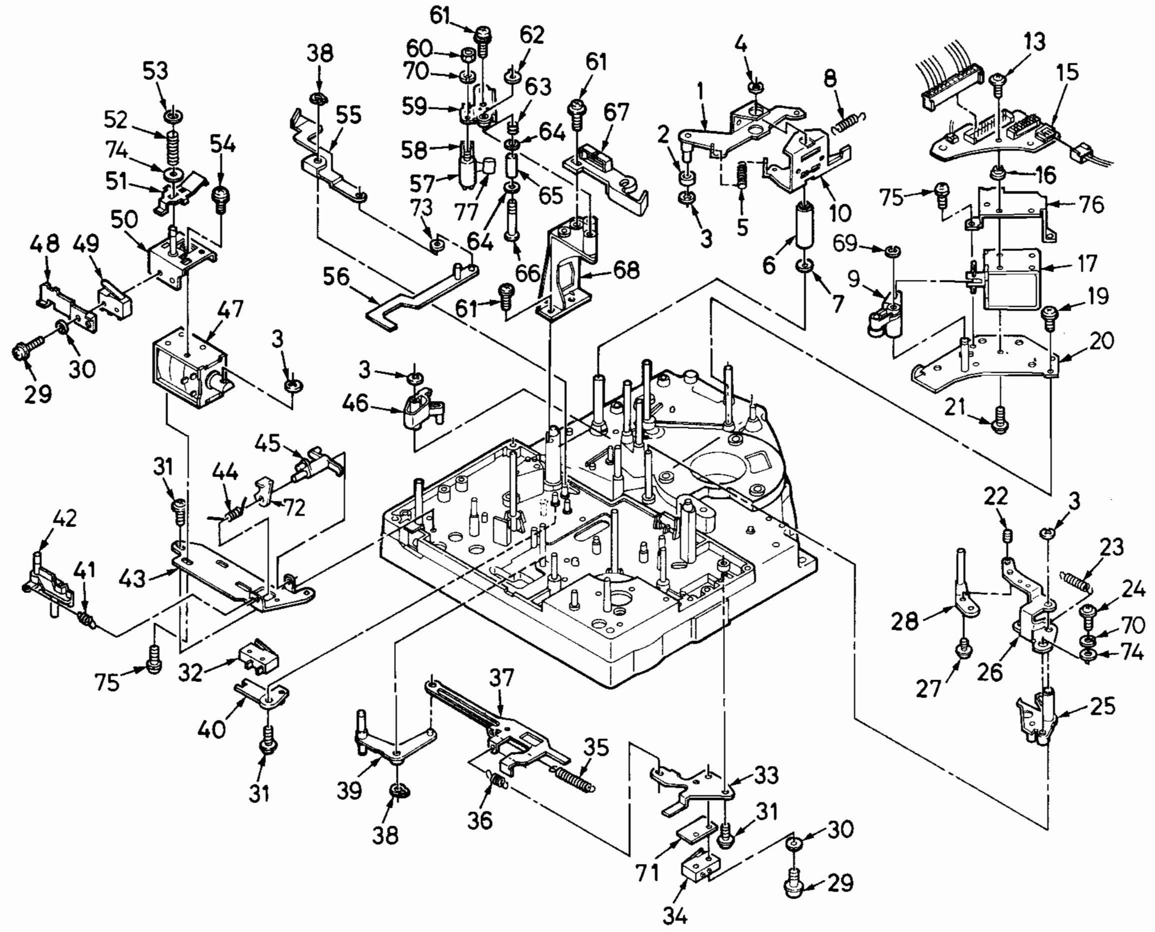

A
A

MEMO

EJECT & PINCH ROLLER PRESSURE MECHANISM PARTS

Ref. No.	Part No.	Description
1	143-0-741T-18600	Lever "2", Pinch Roller Pressure
2	143-2-662T-09100	Roller, Breake Release Lever
3		"E" Ring, 2.3 mm
4		"E" Ring, 3 mm
5	143-2-851T-56700	Spring Coil, Pinch Roller Pressure
6	143-2-461T-03200	Pipe, Pinch Roller Pressure Lever
7	141-2-453T-31701	Washer, 4x8x0.5 mm
8	143-2-851T-56600	Spring Coil, Pinch Roller Release
9	143-0-741T-18700	Operation Lever, Pinch Roller
10	143-2-741T-34400	Lever "1", Pinch Roller Pressure
13		Screw, Washer Hd., Machine (TP Screw), 3x8 mm, Z1
15	143-9-1300-00700	MC-7 Circuit Board Assembly, Wiring
16	143-2-683T-10400	Ring (2 used), PCB. Spacer
17	4-264V-13700	Solenoid, Pinch Roller Pressure
19		Screw, Washer Hd., Machine (TP Screw), 3x10 mm, Z1
20	143-0-351T-07601	Bracket, Pinch Roller Solenoid
21		Screw, Washer Hd., Machine (TP Screw), 3x4 mm, Z1
22		Set Screw, Hex. Socket Hd.(Flat point), 3x4 mm, CP
23	143-2-851T-57900	Spring Coil, Back Tension
24		Screw, Washer Hd., Tapping (B-tight), 3x8mm, Z1
25	143-2-741T-35300	Operation Lever, Back Tension
26	143-0-741T-18500	Lever, Back Tension
27		Screw, Washer Hd., Machine (TP Screw), 3x6 mm, Z1
28	143-0-821T-00400	Tape Guide, Back Tension
29		Screw with Spring Washer, Pan Hd., Machine, 2.3x10mm, Z1
30		Bolt Washer, 2.3x6x0.5mm
31		Screw, Washer Hd., Tapping (B-tight), 3x8mm, Z1
32	4-231V-99400	Cassette-in Switch
or	4-231V-80301	Cassette-in Switch
or	4-231V-99600	Cassette-in Switch
33	143-2-351T-44300	Bracket, Switches
34	4-231V-80400	Loading End Switch
or	4-231V-80401	Loading End Switch
or	4-231V-99400	Loading End Switch
35	143-2-851T-55300	Spring Coil, EJECT Slide Release
36	143-2-851T-55400	Spring Coil, EJECT Slide
37	143-2-731T-08700	EJECT Slide
38		Grip Ring, 3 mm
39	143-0-741T-18400	Joint Lever, EJECT
40	143-2-351T-44200	Bracket, Cassette Switch
41	143-2-851T-56300	Spring Coil, F FWD/REW Solenoid Lever
42	143-0-741T-18000	Lever, F FWD/REW Solenoid
43	143-2-351T-45600	Bracket, F FWD/REW Solenoid
44	143-2-851T-57500	Spring Coil, Gear Select Lever
45	143-0-741T-17900	Select Lever, Reel Drive Lever
46	143-2-741T-35100	Operation Lever, Back Tension Lever
47	4-264V-13800	F FWD/REW Solenoid
48	143-2-351T-47100	Wiring Bracket
49	4-231V-80301	EJECT "2" Switch
or	4-231V-80400	EJECT "2" Switch
or	4-231V-99600	EJECT "2" Switch
50	143-0-351T-08000	Bracket, EJECT "2" Switch
51	143-2-741T-36500	Operation Lever, EJECT "2" Switch
52	143-2-851T-58300	Spring Coil, EJECT "2" Switch
53		Speed Nut, 2.4 mm, CP
54		Screw with Spring Washer & Washer, Pan Hd., Machine, 3x4 mm, Z1
55	143-2-741T-33800	Lever, Release Breake
56	143-0-731T-01200	Slide, PLAY Release Breake
57	4-258V-13400	FWD Sensor
58	4-226V-88400	MC-2 PCB.
59	143-0-822T-01200	Bracket, FWD Sensor
60		Hex. Nut, 3 mm
61		Screw with Spring & Flange Washer, Pan Hd., Machine, 3x8 mm, Z1
62	143-2-411T-01600	Special Nut, FWD Sensor Tape Guide
63	143-2-851T-58100	Spring Coil, FWD Sensor Tape Guide
64	143-2-457T-06100	Special Washer (2 used), FWD Sensor Tape Guide
65	143-2-821T-08001	Tape Guide, FWD Sensor
66	143-2-751T-50100	Shaft, FWD Sensor Tape Guide
67	143-2-135T-14600	Wiring Cover
68	143-2-351T-46300	Bracket, FWD Sensor
69		"E" Ring, 4 mm
70		Spring Washer, 3 mm
71	143-2-352T-08300	Switch Spacer
72	143-2-465T-09700	Stopper
73	141-2-453T-30302	Washer, 3x5.4x0.5 mm
74		Bolt Washer, 3x8x0.5mm, Z1
75		Screw with Spring Washer & Washer, Pan Hd., Machine, 3x5mm, Z1
76	143-2-377T-14400	Bracket, MC-7 PCB.
77		Polypropylene Capacitor, 3300pF, ±2%, 100V

NOTE: Parts order must contain Model Number, Part Number and Description.



MEMO

ELECTRICAL PARTS

NOTE:

* Materials of Capacitors are abbreviated as follows;

Elect., ...	Electrolytic Capacitor
NP. Elect., ...	Non-Polarized Electrolytic
Mylar	Mylar Film Capacitor
Polypro	Polypropylene Capacitor
M. Polypro	Metallized Polypropylene Capacitor
TF	Thin Film Capacitor

* Tolerance of Capacitor are noted with follow symboles;

A	.... +50–10%	M	.... ±20%
G	.... ±2%	N	.... ±30%
J	.... ±5%	P	.... +100–0%
K	.... ±10%	Z	.... +80–20%

* All resistors are of carbon type, ±5%, 1/4 watt unless otherwise noted.

(1) VD-1 PCB. ELECTRICAL PARTS

Schematic Location	Parts No.	Description
		***VIDEO I CIRCUIT .... Location No.1001~**
DL1001	4-284V-13600	Delay Line, 270ns
DL1002	4-284V-13500	Delay Line, 0.6µs
DL1003	4-225V-18200	Crystal, 1HDL
RY1001	4-232V-15400	Relay
		(VARIABLE RESISTORS)
VR1001	4-222V-61705	1K ohms
VR1002	4-222V-61707	5K ohms
VR1003	4-222V-61705	1K ohms
VR1004	4-222V-61705	1K ohms
VR1005	4-222V-61710	50K ohms
VR1006	4-222V-61708	10K ohms
VR1007	4-222V-61708	10K ohms
VR1008	4-222V-61706	2K ohms
VR1009	4-222V-61705	1K ohms
VR1010	4-222V-61705	1K ohms
VR1011	4-222V-61707	5K ohms
		(COIL TRANSFORMERS & COILS)
T1001	4-259V-20300	HF Coil Trans.
T1002	4-259V-20200	HF Coil Trans.
T1003	4-253V-92800	HF Coil Trans.
or	4-253V-94900	HF Coil Trans.
L1001	4-253V-97010	HF Choke, 56µH
L1002	4-253V-97005	HF Choke, 22µH
L1003	4-253V-97004	HF Choke, 18µH
L1004	4-253V-97015	HF Choke, 150µH
L1005	4-253V-97011	HF Choke, 68µH
L1006	4-253V-97004	HF Choke, 18µH
L1007	4-253V-85827	HF Choke, 150µH
L1008	4-253V-97005	HF Choke, 22µH
L1009	4-253V-97016	HF Choke, 180µH
L1010	4-253V-85830	HF Choke, 270µH
L1011	4-253V-97016	HF Choke, 180µH
L1012	4-253V-97004	HF Choke, 18µH
L1013	4-253V-97004	HF Choke, 18µH
L1014	4-253V-85828	HF Choke, 180µH
L1015	4-253V-85830	HF Choke, 270µH
L1016	4-253V-85828	HF Choke, 180µH
L1017	4-253V-97015	HF Choke, 150µH
L1018	4-253V-85819	HF Choke, 33µH
		(IC's & TRANSISTORS)
Q1001		IC, LA7020
Q1002		IC, LA7025
Q1003		IC, LA7013
Q1004		IC, LA7019
Q1005		2SC930D or E
Q1006		2SA608E or F or 2SA844D
Q1007		2SC930D or E
Q1008		2SC930D or E
Q1009		2SA838B or C or 2SA844D
Q1010		2SA838B or C or 2SA844D
Q1011		2SC930D or E
Q1012		2SC1741Q or R
Q1013		2SC1741Q or R
Q1014		2SC945Q or R or 2SC536E or F
Q1015		2SC930D or E
Q1016		2SC930D or E
Q1017		2SA838B or C or 2SA844D
Q1018		2SC945Q or R or 2SC536E or F
Q1019		2SC945Q or R or 2SC536E or F
Q1020		2SB544D or E
Q1021		2SC945Q or R or 2SC536E or F
Q1022		2SA608E or F or 2SA844D
Q1023		2SC930E or D
Q1024		2SC930D or E
		(DIODES)
D1001		1S2473 or 1SS133
D1002		1S2473 or 1SS133
D1003		1S2473 or 1SS133
D1004		1S2473 or 1SS133
D1005		1S2473 or 1SS133
D1006		1S2473 or 1SS133
		(CAPACITORS)
C1001		Elect., 100mfd (M), 10V
C1002		Ceramic, 75pF (J), 50V
C1003		Ceramic, 15pF (J), 50V
C1004		Ceramic, 150pF (K), 50V
C1005		Elect., 22mfd (M), 16V
C1006		Elect., 10mfd (M), 16V
C1007		Ceramic, 150pF (K), 50V
C1008		Mylar, 0.1mfd (J), 50V
C1009		BL Ceramic, 0.047mfd (K), 25V
C1010		Elect., 47mfd (M), 16V
C1011		BL Ceramic, 0.01mfd (N), 25V
C1012		Ceramic, 680pF (K), 50V
C1013		Ceramic, 330pF (K), 50V

Schematic Location	Parts No.	Description
C1014		BL Ceramic, 0.01mfd (N), 25V
C1015		BL Ceramic, 0.01mfd (N), 25V
C1016		BL Ceramic, 0.01mfd (N), 25V
C1017		Elect., 100mfd (M), 10V
C1018		Ceramic, 430pF (K), 50V
C1019		Ceramic, 390pF (K), 50V
C1020		Ceramic, 8pF (J), 50V
C1021		Ceramic, 100pF (J), 50V, CH
C1023		BL Ceramic, 0.047mfd (K), 25V
C1024		Ceramic, 180pF (K), 50V
C1025		Ceramic, 10pF (J), 50V
C1026		Elect., 47mfd (M), 16V
C1027		BL Ceramic, 0.047mfd (K), 25V
C1028		Ceramic, 390pF (K), 50V
C1029		Ceramic, 300pF (K), 50V
C1030		Ceramic, 180pF (K), 50V
C1031		Ceramic, 120pF(J), 50V
C1032		Elect., 100mfd (M), 10V
C1033		Ceramic, 51pF (J), 50V, CH
C1034		Ceramic, 7pF (J), 50V
C1035		Ceramic, 27pF (J), 50V
C1036		Ceramic, 27pF (J), 50V
C1037		Ceramic, 7pF (J), 50V
C1038		Ceramic, 27pF (J), 50V
C1039		Elect., 1000mfd (M), 10V
C1040		Elect., 10mfd (M), 16V
C1041		BL Ceramic, 0.01mfd (N), 25V
C1042		Ceramic, 510pF (K), 50V
C1043		Elect., 100mfd (M), 10V
C1044		Ceramic, 150pF (K), 50V
C1045		BL Ceramic, 0.01mfd (N), 25V
C1046		BL Ceramic, 0.047mfd (K), 25V
C1047		Elect., 47mfd (M), 16V
C1048		BL Ceramic, 0.047mfd (K), 25V
C1049		Elect., 4.7mfd (M), 25V
C1050		BL Ceramic, 0.01mfd (N), 25V
C1051		BL Ceramic, 0.01mfd (N), 25V
C1052		BL Ceramic, 0.01mfd (N), 25V
C1053		Ceramic, 7pF (J), 50V
C1054		Ceramic, 27pF (J), 50V
C1055		Ceramic, 27pF (J), 50V
C1056		Ceramic, 7pF (J), 50V
C1057		Ceramic, 75pF (J), 50V, CH
C1058		BL Ceramic, 0.01mfd (N), 25V
C1059		Elect., 47mfd (M), 16V
C1060		BL Ceramic, 0.047mfd (K), 25V
C1061		Elect., 100mfd (M), 10V
C1062		Elect., 100mfd (M), 10V
C1063		Ceramic, 820pF (K), 50V
C1064		BL Ceramic, 2700pF (N), 25V
C1065		Elect., 100mfd (M), 10V
C1066		Elect., 1mfd (M), 50V
C1067		Ceramic, 120pF (J), 50V
C1068		Ceramic, 100pF (J), 50V
C1069		Elect., 22mfd (M), 16V
C1070		Elect., 4.7mfd (M), 25V
C1071		Mylar, 0.0082mfd (J), 50V
C1072		Mylar, 0.022mfd (J), 50V
C1074		Elect., 10mfd (M), 16V
C1075		Elect., 47mfd (M), 16V
C1076		BL Ceramic, 0.01mfd (N), 25V
C1077		Mylar, 0.22mfd (M), 50V
C1078		Ceramic, 39pF (J), 50V
C1084		BL Ceramic, 0.01mfd (N), 25V
C1085		BL Ceramic, 0.01mfd (N), 25V
C1086		BL Ceramic, 0.01mfd (N), 25V

Schematic Location	Parts No.	Description
C1087		Elect., 47mfd (M), 16V
C1089		BL Ceramic, 0.047mfd (K), 25V
C1091		BL Ceramic, 0.047mfd (K), 25V
C1092		Elect., 47mfd (M), 16V
C1093		Elect., 47mfd (M), 16V
C1094		BL Ceramic, 0.047mfd (K), 25V
C1098		BL Ceramic, 0.047mfd (K), 25V
C1099		BL Ceramic, 0.047mfd (K), 25V
C1100		BL Ceramic, 0.047mfd (K), 25V
C1101		BL Ceramic, 0.022mfd (N), 16V
C1102		Ceramic, 82pF (J), 50V
		(RESISTORS)
R1001		75 ohms
R1002		10K ohms
R1003		10K ohms
R1004		2.2K ohms
R1005		1K ohms
R1006		1.5K ohms
R1007		56K ohms
R1008		2K ohms
R1009		1K ohms
R1010		1K ohms
R1011		1M ohms
R1012		9.1K ohms
R1013		1.2K ohms
R1014		1K ohms
R1015		10K ohms
R1016		330 ohms
R1017		1K ohms
R1018		1K ohms
R1019		10K ohms
R1020		1K ohms
R1021		3.9K ohms
R1022		820 ohms
R1023		430 ohms
R1024		2.2K ohms
R1025		3.9K ohms
R1026		1.1K ohms
R1027		10K ohms
R1028		120K ohms
R1029		3.3K ohms
R1030		22K ohms
R1031		150 ohms
R1032		130 ohms
R1033		1.6K ohms
R1034		10K ohms
R1035		1.6K ohms
R1036		820 ohms
R1037		1M ohms
R1038		2.2K ohms
R1039		1K ohms
R1040		240 ohms
R1041		270 ohms
R1042		1.6K ohms
R1043		820 ohms
R1044		1.8K ohms
R1045		1K ohms
R1046		10K ohms
R1047		620 ohms
R1048		560 ohms
R1049		560 ohms
R1050		2.7K ohms
R1051		4.7K ohms
R1052		300 ohms
R1053		5.6K ohms
R1054		3.3K ohms

Schematic Location	Parts No.	Description
R1055		33K ohms
R1056		3.3K ohms
R1057		100 ohms
R1058		68 ohms
R1059		10K ohms
R1060		750 ohms
R1061		68 ohms
R1062		68 ohms
R1063		33K ohms
R1064		1K ohms
R1065		1K ohms
R1066		1K ohms
R1067		1.8K ohms
R1068		510K ohms
R1069		220 ohms
R1070		200K ohms
R1071		10K ohms
R1072		100 ohms
R1073		100 ohms
R1074		100 ohms
R1075		33K ohms
R1076		33K ohms
R1077		470 ohms
R1078		270 ohms
R1079		270 ohms
R1080		33K ohms
R1081		33K ohms
R1082		1K ohms
R1083		1K ohms
R1084		3.3K ohms
R1085		3.3K ohms
R1086		3.3K ohms
R1087		3.3K ohms
R1088		100 ohms
R1089		470 ohms
R1090		47 ohms
R1091		680 ohms
R1092		13K ohms
R1093		1K ohms
R1094		9.1K ohms
R1095		22K ohms
R1096		22K ohms
R1097		33K ohms
R1098		33K ohms
R1099		3.6K ohms
R1100		10K ohms
R1101		3K ohms
R1102		10K ohms
R1103		22K ohms
R1104		15K ohms
R1105		10K ohms
R1108		220 ohms
R1109		10K ohms
R1112		82K ohms
R1113		560 ohms
R1114		10K ohms
R1119		47K ohms
R1120		1.6K ohms
R1122		22K ohms
R1123		100 ohms
R1124		10K ohms
R1125		1K ohms
R1126		33K ohms

Schematic Location	Parts No.	Description
		***AUDIO CIRCUIT . . . Location No. 2001 ~**
RY2001	4-232V-15400	Relay
		(VARIABLE RESISTORS)
VR2001	4-222V-64407	20K ohms
VR2002	4-222V-64406	10K ohms
VR2003	4-222V-61713	500K ohms
VR2004	4-222V-64406	10K ohms
		(COIL TRANSFORMERS & COILS)
T2001	4-258V-13700	OSC Coil
L2001	4-253V-95600	HF Choke, 27mH
L2002	4-253V-96900	HF Choke, 7mH
L2003	4-253V-95800	HF Choke, 27mH
L2004	4-253V-84110	HF Choke, 560μH
L2005	4-253V-94100	HF Choke, 330μH
		(IC's & TRANSISTORS)
Q2001		IC, BA5102
Q2002		2SD1011R or S or T
Q2003		2SD1011R or S or T
Q2004		2SC945P or Q
Q2005		2SA1016F or G
Q2009		2SC536E or F
Q2011		2SC536E or F
Q2012		2SD438E or F
Q2013		2SB598F
Q2014		2SC536E or F
Q2015		2SC536E or F
Q2016		2SC536E or F
		(DIODES)
D2001		1SS133
D2002		1SS133
D2003		1SS133
D2004		1SS133
D2005		Zener, WZ050
D2006		1SS133
D2007		1SS133
D2008		1SS133
		(CAPACITORS)
C2001		Elect., 2.2mfd (M), 16V
C2002		Elect., 47mfd (M), 6.3V
C2003		Elect., 22mfd (M), 6.3V
C2004		Elect., 100mfd (M), 10V
C2005		Elect., 22mfd (M), 16V
C2006		Elect., 4.7mfd (M), 16V
C2007		Elect., 4.7mfd (M), 16V
C2008		Elect., 0.47mfd (M), 16V
C2009		BL Ceramic, 0.033mfd (K), 25V
C2010		Elect., 100mfd (M), 10V
C2012		Elect., 0.15mfd (M), 25V
C2013		Elect., 4.7mfd (M), 16V
C2015		Ceramic, 200pF (K), 50V
C2016		Elect., 2.2mfd (M), 16V
C2017		Elect., 10mfd (M), 16V
C2018		BL Ceramic, 0.012mfd (K), 50V
C2019		Ceramic, 330pF (K), 50V
C2021		Elect., 3.3mfd (M), 16V
C2022		Elect., 0.47mfd (M), 16V
C2023		Elect., 100mfd (M), 10V
C2024		BL Ceramic, 4700pF (K), 50V
C2025		Ceramic, 220pF (K), 50V
C2026		Elect., 47mfd (M), 6.3V

Schematic Location	Parts No.	Description
C2027		BL Ceramic, 1200pF (K), 50V
C2028		BL Ceramic, 0.01mfd (M), 25V
C2029		Ceramic, 220pF (K), 50V
C2031		Polypro., 0.018mfd (K), 200V
C2032		Aluminium, 4.7mfd (M), 25V
C2033		Mylar, 0.033mfd (K), 50V
C2034		Mylar, 0.01mfd (K), 50V
C2035		Mylar, 0.01mfd (K), 50V
C2036		Elect., 47mfd (M), 16V
		(RESISTORS)
R2003		2.2K ohms
R2004		18K ohms
R2005		33K ohms
R2006		2.2M ohms
R2007		47K ohms
R2008		1K ohms
R2009		6.8K ohms
R2010		33K ohms
R2011		8.2K ohms
R2012		3.3K ohms
R2016		2.2K ohms
R2017		2.2K ohms
R2018		120K ohms
R1019		180 ohms
R2023		2.2K ohms
R2024		390 ohms
R2025		4.7K ohms
R2026		15K ohms
R2027		2.2K ohms
R2028		10K ohms
R2029		10K ohms
R2030		10K ohms
R2031		10K ohms
R2032		10K ohms
R2033		3.3K ohms
R2037		5.6K ohms
R2038		Non Flammable, 4.7 ohms
R2044		5.6K ohms
R2047		2.2K ohms
R2048		5.6K ohms
R2051		68K ohms
R2052		68K ohms
R2053		4.7K ohms
R2054		1 ohms
R2055		47K ohms
R2056		100K ohms
R2057		47K ohms
R2058		10K ohms
R2059		1K ohms
R2060		10K ohms
R2061		12K ohms
R2062		68K ohms

(2) VD-2 PCB. ELECTRICAL PARTS

Schematic Location	Parts No.	Description
		***VIDEO II CIRCUIT ...** **Location No. 1201 ~**
DL1201	4-284V-13300	Delay Line, 2H
or	4-225V-18300	Crystal, 2H
DL1202	4-284V-14600	Delay Line
X1201	4-225V-19000	Crystal
X1202	4-225V-18400	Crystal, 4.433619M Hz
CF1201	4-953V-06100	Filter
VC1201	4-224V-10900	Trimmer
BPF1201	4-228V-15000	LC Pack
		(VARIABLE RESISTORS)
VR1201	4-222V-61708	10K ohms
VR1202	4-222V-61706	2K ohms
VR1203	4-222V-61706	2K ohms
VR1204	4-222V-61704	500 ohms
VR1205	4-222V-61707	5K ohms
VR1206	4-222V-61706	2K ohms
VR1207	4-222V-61713	500K ohms
VR1209	4-222V-61707	5K ohms
VR1210	4-222V-61705	1K ohms
VR1211	4-222V-61707	5K ohms
VR1212	4-222V-61710	50K ohms
VR1213	4-222V-61707	5K ohms
		(COIL TRANSFORMERS & COILS)
T1201	4-259V-20400	HF Coil Trans.
T1202	4-259V-23850	HF Coil Trans.
T1203	4-258V-13800	OSC Coil
T1204	4-258V-13800	OSC Coil
T1205	4-259V-23000	HF Coil Trans.
T1206	4-258V-13800	OSC Coil
T1207	4-259V-23100	HF Coil Trans.
T1208	4-259V-20800	HF Coil Trans.
T1209	4-259V-20900	HF Coil Trans.
L1201	4-253V-85824	HF Choke, 82μH
L1202	4-253V-85826	HF Choke, 120μH
L1203	4-253V-85826	HF Choke, 120μH
L1204	4-253V-85821	HF Choke, 47μH
L1205	4-253V-85820	HF Choke, 39μH
L1206	4-253V-94600	HF Choke, 6.8mH
L1207	4-253V-85830	HF Choke, 270μH
L1208	4-253V-85830	HF Choke, 270μH
L1209	4-253V-85813	HF Choke, 10μH
L1210	4-253V-85811	HF Choke, 6.8μH
L1211	4-253V-94300	HF Choke, 8.2mH
L1212	4-253V-85833	HF Choke, 470μH
L1213	4-253V-85823	HF Choke, 68μH
L1214	4-253V-85819	HF Choke, 33μH
L1215	4-253V-85815	HF Choke, 15μH
		(IC's & TRANSISTORS)
Q1201		IC, M51437P
Q1202		IC, M51438P
Q1203		IC, M50180P
Q1204		IC, M51439
Q1205		2SC930D or E
Q1206		2SC536E or F or 2SC945Q or R
Q1207		2SC536E or F or 2SC945Q or R
Q1208		2SC536E or F or 2SC945Q or R
Q1209		2SC930D or E
Q1210		2SA838B or C or 2SA844D
Q1211		2SC930D or E
Q1212		2SC930D or E
Q1213		2SC930D or E
Q1214		2SC930D or E
Q1215		2SC930D or E
Q1216		2SC930D or E
Q1217		2SC930D or E
Q1218		2SC930D or E
Q1219		2SC930D or E
Q1220		2SC930D or E

Schematic Location	Parts No.	Description
Q1221		2SC930D or E
Q1222		2SC930D or E
Q1223		2SC930D or E
Q1224		2SC930D or E
Q1225		2SA838B or C or 2SA844D
Q1226		2SC930D or E
Q1227		2SC536E or F or 2SC945Q or R
Q1228		2SC930D or E
Q1229		2SC930D or E
Q1230		2SC930D or E
Q1231		2SC930D or E
Q1232		2SC536E or F or 2SC945Q or R
Q1233		2SC536E or F or 2SC945Q or R
Q1234		2SC1645B
Q1235		IC, TA7347P
		(DIODES)
D1201		1S2473 or 1SS133
D1202		1S2473 or 1SS133
D1203		1S2473 or 1SS133
D1204		1S2473 or 1SS133
D1205		1S2473 or 1SS133
D1206		1S2473 or 1SS133
D1207		1S2473 or 1SS133
		(CAPACITORS)
C1201		Elect., 47mfd (M), 16V
C1202		BL Ceramic, 0.047mfd (K), 25V
C1203		Ceramic, 18pF (J), 50V
C1204		BL Ceramic, 0.01mfd (K), 25V
C1205		BL Ceramic, 0.01mfd (K), 25V
C1206		Elect., 0.33mfd (M), 50V
C1207		Elect., 1mfd (M), 50V
C1208		BL Ceramic, 0.01mfd (K), 25V
C1209		Ceramic, 240pF (J), 50V
C1210		Ceramic, 56pF (J), 50V
C1211		BL Ceramic, 0.01mfd (K), 25V
C1212		BL Ceramic, 0.01mfd (K), 25V
C1213		BL Ceramic, 0.01mfd (K), 25V
C1214		BL Ceramic, 0.01mfd (K), 25V
C1215		Ceramic , 220pF (J), 50V
C1216		BL Ceramic, 0.01mfd (K), 25V
C1218		Ceramic, 27pF (J), 50V
C1219		NP, Elect., 22mfd (M), 50V
C1220		Elect., 3.3mfd (M), 50V
C1221		NP, Elect., 22mfd (M), 50V
C1222		Elect., 3.3mfd (M), 50V
C1223		BL Ceramic, 0.047mfd (K), 25V
C1224		Elect., 47mfd (M), 16V
C1225		BL Ceramic, 0.01mfd (K), 25V
C1226		Ceramic, 33pF (J), 50V
C1228		BL Ceramic, 0.01mfd (K), 25V
C1229		BL Ceramic, 0.047mfd (K), 25V
C1230		Ceramic, 220pF (J), 50V, CH
C1231		Elect., 47mfd (M), 16V
C1232		BL Ceramic, 0.047mfd (K), 25V
C1234		BL Ceramic, 0.01mfd (K), 25V
C1235		BL Ceramic, 0.01mfd (K), 25V
C1236		Mylar, 0.01mfd (K), 50V
C1237		Mylar, 0.01mfd (K), 50V
C1238		Ceramic, 27pF (J), 50V, CH
C1239		BL Ceramic, 0.01mfd (K), 25V
C1240		BL Ceramic, 0.047mfd (K), 25V
C1241		BL Ceramic, 0.01mfd (K), 25V
C1242		Ceramic, 27pF (J), 50V, CH
C1243		BL Ceramic, 0.01mfd (K), 25V
C1244		Tantalum, 2.2mfd (K), 16V

Schematic Location	Parts No.	Description
C1255		Mylar, 0.022mfd (K), 50V
C1256		Ceramic, 1000pF (J), 50V
C1257		Ceramic, 1000pF (J), 50V
C1258		Elect., 10mfd (M), 16V
C1259		BL Ceramic, 0.01mfd (K), 25V
C1260		BL Ceramic, 0.01mfd (K), 25V
C1261		Mylar, 820pF (K), 50V
C1262		Tantalum, 0.22mfd (K), 35V
C1263		Tantalum, 4.7mfd (K), 16V
C1264		BL Ceramic, 0.047mfd (K), 25V
C1265		Ceramic, 22pF (J), 50V
C1266		Ceramic, 68pF (J), 50V
C1267		Ceramic, 22pF (J), 50V
C1268		BL Ceramic, 0.047mfd (K), 25V
C1269		BL Ceramic, 0.01mfd (K), 25V
C1270		BL Ceramic, 0.01mfd (K), 25V
C1271		BL Ceramic, 0.047mfd (K), 25V
C1272		BL Ceramic, 0.01mfd (K), 25V
C1273		BL Ceramic, 0.01mfd (K), 25V
C1274		BL Ceramic, 0.01mfd (K), 25V
C1275		Ceramic, 47pF (J), 50V, RH
C1276		Ceramic, 22pF (J), 50V, CH
C1278		Elect., 4.7mfd (M), 25V
C1279		BL Ceramic, 0.01mfd (K), 25V
C1280		BL Ceramic, 0.01mfd (K), 25V
C1281		BL Ceramic, 0.047mfd (K), 25V
C1282		Elect., 47mfd (M), 16V
C1283		Mylar, 1000pF (K), 50V
C1284		Mylar, 1000pF (K), 50V
C1285		BL Ceramic, 0.01mfd (K), 25V
C1286		BL Ceramic, 0.01mfd (K), 25V
C1287		BL Ceramic, 0.01mfd (K), 25V
C1288		BL Ceramic, 0.01mfd (K), 25V
C1289		Elect., 10mfd (M), 16V
C1290		Ceramic, 1200pF (K), 50V
C1291		Ceramic, 1200pF (K), 50V
C1292		Elect., 4.7mfd (M), 25V
C1293		Ceramic, 100pF (J), 50V, CH
C1294		Mylar, 1000pF (K), 50V
C1295		Elect., 4.7mfd (M), 25V
C1296		Elect., 1mfd (M), 50V
C1297		Elect., 47mfd (M), 16V
C1298		BL Ceramic, 0.047mfd (K), 25V
C1299		Ceramic, 120pF (J), 50V
C1300		BL Ceramic, 0.01mfd (K), 25V
C1301		Mylar, 2200pF (K), 50V
C1302		Mylar, 4700pF (K), 50V
C1303		Ceramic, 220pF (J), 50V, CH
C1304		Elect., 47mfd (M), 16V
C1305		BL Ceramic, 0.047mfd (K), 25V
C1306		Mylar, 6800pF (K), 50V
C1307		Elect., 0.47mfd (M), 50V
C1308		Mylar, 0.015mfd (K), 50V
C1309		Ceramic, 330pF (J), 50V
C1310		Elect., 10mfd (M), 16V
C1311		Elect., 10mfd (M), 16V
C1312		Elect., 10mfd (M), 16V
C1313		Mylar, 470pF (K), 50V
C1314		Elect., 1mfd (M), 50V
C1315		Mylar, 0.01mfd (K), 50V
C1316		Mylar, 1000pF (K), 50V
C1317		Mylar, 5600pF (K), 50V
C1318		Ceramic, 27pF (J), 50V
C1319		Elect., 10mfd (M), 16V
C1320		BL Ceramic, 0.01mfd (K), 25V
C1321		Ceramic, 82pF (J), 50V, CH
C1322		Elect., 47mfd (M), 16V

Schematic Location	Parts No.	Description
C1323		BL Ceramic, 0.047mfd (K), 25V
C1324		Ceramic, 22pF (J), 50V, CH
C1325		BL Ceramic, 0.01mfd (K), 25V
C1326		BL Ceramic, 0.01mfd (K), 25V
C1327		Ceramic, 27pF (J), 50V, CH
C1328		Ceramic, 82pF (J), 50V, CH
C1329		Ceramic, 82pF (J), 50V, CH
C1330		BL Ceramic, 0.022mfd (K), 25V
C1331		BL Ceramic, 0.01mfd (K), 25V
C1332		Elect., 0.47mfd (M), 50V
C1333		BL Ceramic, 0.047mfd (K), 25V
C1334		Ceramic, 100pF (J), 50V, CH
C1335		Ceramic, 100pF (J), 50V, CH
C1336		Elect., 4.7mfd (M), 25V
C1337		Elect., 47mfd (M), 16V
C1338		BL Ceramic, 0.047mfd (K), 25V
C1339		Ceramic, 27pF (J), 50V
C1340		NP. Elect., 1mfd (M), 50V
C1341		BL Ceramic, 0.01mfd (K), 25V
C1342		BL Ceramic, 0.047mfd (K), 25V
C1343		Elect., 47mfd (M), 16V
C1344		BL Ceramic, 0.01mfd (K), 25V
C1345		BL Ceramic, 0.022mfd (K), 25V
C1347		BL Ceramic, 0.047mfd (K), 25V
C1348		Elect., 47mfd (M), 16V
C1349		BL Ceramic, 0.01mfd (K), 25V
C1350		Ceramic, 220pF (J), 50V
C1351		BL Ceramic, 0.047mfd (K), 25V
C1352		Elect., 47mfd (M), 16V
C1353		Elect., 47mfd (M), 16V
C1354		BL Ceramic, 0.047mfd (K), 25V
C1355		BL Ceramic, 0.01mfd (K), 50V
C1356		Ceramic, 100pF (J), 50V
C1359		BL Ceramic, 0.047mfd (K), 25V
C1360		Elect., 47mfd (M), 16V
C1361		Elect., 47mfd (M), 16V
C1362		Elect., 47mfd (M), 16V
C1363		BL Ceramic, 0.047mfd (K), 25V
		(RESISTORS)
R1201		1K ohms
R1202		240 ohms
R1203		750 ohms
R1204		180K ohms
R1205		220K ohms
R1206		4.7K ohms
R1207		100K ohms
R1208		33K ohms
R1209		10K ohms
R1210		10K ohms
R1211		100 ohms
R1212		2.2K ohms
R1213		4.7K ohms
R1214		4.7K ohms
R1215		1K ohms
R1216		100 ohms
R1217		4.7K ohms
R1218		68K ohms
R1219		33K ohms
R1220		1K ohms
R1221		8.2K ohms
R1222		1K ohms
R1223		1.8K ohms
R1224		100 ohms
R1225		56K ohms
R1226		56K ohms
R1227		560 ohms

Schematic Location	Parts No.	Description
R1228		1K ohms
R1229		51K ohms
R1231		3.3K ohms
R1232		100 ohms
R1233		5.1K ohms
R1234		51K ohms
R1235		22K ohms
R1236		10K ohms
R1237		2K ohms
R1238		3.3K ohms
R1239		2.2K ohms
R1240		1.5K ohms
R1241		10K ohms
R1242		10K ohms
R1243		1K ohms
R1244		2.2K ohms
R1245		3.3K ohms
R1246		4.7K ohms
R1247		1.5K ohms
R1248		6.8K ohms
R1249		3.3K ohms
R1250		2.2K ohms
R1251		4.7K ohms
R1252		510 ohms
R1253		150 ohms
R1254		1.6K ohms
R1255		43K ohms
R1256		15K ohms
R1257		2.2K ohms
R1258		1.3K ohms
R1259		330 ohms
R1260		390 ohms
R1261		390 ohms
R1262		390 ohms
R1263		290 ohms
R1264		2.2K ohms
R1265		510 ohms
R1266		390 ohms
R1267		11K ohms
R1268		7.5K ohms
R1269		1K ohms
R1270		68K ohms
R1271		1K ohms
R1272		1K ohms
R1273		43K ohms
R1274		2K ohms
R1275		8.2K ohms
R1276		3.9K ohms
R1277		3.9K ohms
R1278		3.3K ohms
R1279		15K ohms
R1280		100K ohms
R1281		6.8K ohms
R1282		2.4K ohms
R1283		4.7K ohms
R1284		10K ohms
R1285		15K ohms
R1286		120 ohms
R1287		390 ohms
R1288		150 ohms
R1289		47 ohms
R1290		470 ohms
R1291		68K ohms
R1292		62K ohms
R1293		12K ohms
R1294		10K ohms
R1298		10K ohms

Schematic Location	Part No.	Description
R1299		7.5K ohms
R1300		1K ohms
R1301		2.2K ohms
R1302		15K ohms
R1303		10K ohms
R1304		10K ohms
R1305		82K ohms
R1306		5.1K ohms
R1307		Metal Glaze, 1K ohms
R1308		Metal Glaze, 3.9K ohms
R1309		10K ohms
R1310		2.2K ohms
R1311		15K ohms
R1312		18K ohms
R1313		82K ohms
R1314		4.3K ohms
R1315		1.2K ohms
R1316		47K ohms
R1317		1K ohms
R1318		2K ohms
R1319		100K ohms
R1320		4.3K ohms
R1321		6.2K ohms
R1322		10K ohms
R1323		3.6K ohms
R1325		10K ohms
R1326		4.7K ohms
R1327		56K ohms
R1328		15K ohms
R1329		12K ohms
R1330		5.1K ohms
R1331		3.9K ohms
R1332		15K ohms
R1333		3K ohms
R1334		200 ohms
R1335		6.2K ohms
R1336		12K ohms
R1337		2.7K ohms
R1338		1.8K ohms
R1339		470 ohms
R1340		20K ohms
R1341		15K ohms
R1342		5.6K ohms
R1343		4.7K ohms
R1344		100K ohms
R1346		10K ohms
R1347		16K ohms
R1348		47K ohms
R1349		10K ohms
R1350		10K ohms
R1351		10K ohms
R1352		1M ohms
R1353		6.8K ohms
R1354		3K ohms
R1355		6.8K ohms
R1356		24K ohms
R1357		39K ohms
R1359		2.2K ohms
R1360		2.2K ohms
R1361		150 ohms
R1363		1K ohms
R1364		470 ohms
R1366		1K ohms
R1367		1K ohms
R1368		1K ohms

Schematic Location	Parts No.	Description
		***SYSTEM CONTROL CIRCUIT ... Location No. 3001 ~**
CF3001	4-953V-03400	Filter
		(IC's & TRANSISTORS)
Q3001		IC, LM6402A-022
Q3002		IC, LC7800
Q3003		IC, LC7800
Q3004		IC, TC4028B or µPD4028BC
Q3005		IC, LA7011
Q3006		IC, BA6135
Q3007		IC, TC4011B or LC4011B
Q3008		IC, TC4069B
Q3009		IC, LB1274K
Q3010		IC, LB1274K
Q3011		IC, µPD4528BC or TC4528BP
Q3013		2SC2274E or F
Q3014		2SC536E or F
Q3015		2SC536E or F
Q3017		2SA937Q or R
Q3018		2SA937Q or R
Q3019		2SD325E or F
Q3020		2SB632E or F
Q3021		2SB632E or F
Q3022		2SD1153 or 2SD1140
Q3023		2SD1153 or 2SD1140
Q3024		2SD1153 or 1SD1140
Q3025		2SD1153 or 2SD1140
Q3026		2SD1153 or 2SD1140
Q3027		2SD1153 or 2SD1140
Q3028		2SD1153 or 2SD1140
Q3029		2SC2021Q or R
Q3030		2SC2021Q or R
Q3031		2SA937Q or R
Q3032		2SC536E or F
Q3033		2SC536E or F
Q3034		2SA937Q or R
		(DIODES)
D3002		Zener, GZA5.6Z
D3003		DS442
D3004		DS135D
D3005		DS135D
D3006		DS135D
D3007		DS135D
D3008		DS442
D3009		DS442
D3010		DS442
D3011		DS442 or 1S2473
D3012		DS442
D3013		DS442
D3014		DS442
D3015		DS442
D3016		DS442
D3017		DS442
D3018		DS442
D3019		DS442
D3020		DS442
D3021		DS442
D3022		DS442
D3023		DS442
D3024		DS442
D3025		DS442
D3026		DS442
D3027		DS442
D3028		DS442

Schematic Location	Parts No.	Description
D3029		DS442
D3030		DS442
D3031		DS442
D3032		DS442
D3033		DS442
D3034		DS442
D3035		Zener, GZA5.6Z
D3036		DS442
D3037		DS442
D3038		DS442
D3039		DS442
D3040		DS442
D3041		DS442
D3042		DS442
D3043		DS442
D3044		DS442
D3045		DS442
D3046		DS442
		(CAPACITORS)
C3001		Elect., 100mfd (M), 16V
C3002		BL Ceramic, 0.1mfd (M), 12V
C3003		BL Ceramic, 0.1mfd (M), 12V
C3004		BL Ceramic, 0.1mfd (M), 12V
C3005		BL Ceramic, 0.1mfd (M), 12V
C3006		Ceramic, 150pF (J), 50V
C3007		Ceramic, 150pF (J), 50V
C3008		Elect., 10mfd (M), 16V
C3009		Elect., 0.1mfd (M), 16V
C3010		Elect., 10mfd (M), 16V
C3011		Elect., 2.2mfd (M), 16V
C3012		Elect., 4.7mfd (M), 16V
C3013		Ceramic, 220pF (J), 50V
C3014		Ceramic, 220pF (J), 50V
C3015		Elect., 10mfd (M), 16V
C3016		Elect., 10mfd (M), 16V
C3017		Elect., 47mfd (M), 6.3V
C3018		Elect., 4.7mfd (M), 16V
C3019		Elect., 4.7mfd (M), 16V
C3020		BL Ceramic, 0.01mfd (K), 25V
C3021		Elect., 330mfd (M), 16V
C3022		Elect., 47mfd (M), 16V
C3023		BL Ceramic, 0.1mfd (M), 12V
C3024		BL Ceramic, 0.1mfd (M), 12V
		(RESISTORS)
R3001	4-957V-10313	R-pack
R3002	4-957V-10310	R-pack
R3003	4-957V-47208	R-pack
R3004	4-957V-47213	R-pack
R3010		1K ohms
R3011		240K ohms
R3012		220K ohms
R3013		18K ohms
R3014		620 ohms
R3015		4.7M ohms
R3016		330K ohms
R3017		270K ohms
R3018		100K ohms
R3019		100K ohms
R3020		1K ohms
R3021		1K ohms
R3022		1K ohms
R3023		1K ohms
R3024		1K ohms
R3025		1K ohms

Schematic Location	Parts No.	Description
R3026		1K ohms
R3027		1K ohms
R3028		1K ohms
R3029		1K ohms
R3030		1K ohms
R3031		1K ohms
R3032		1K ohms
R3033		1K ohms
R3034		1K ohms
R3035		22K ohms
R3036		2.2K ohms
R3037		1M ohms
R3039		10K ohms
R3040		100K ohms
R3041		100K ohms
R3042		2.2K ohms
R3043		2.2K ohms
R3044		2.2K ohms
R3045		2.2K ohms
R3046		2.2K ohms
R3047		10K ohms
R3048		10K ohms
R3049		10K ohms
R3050		10K ohms
R3051		330 ohms
R3052		270 ohms
R3053		Non Flammable, 1 ohms
R3054		470 ohms
R3055		100K ohms
R3056		100K ohms
R3057		470 ohms
R3058		22K ohms
R3059		22K ohms
R3060		22K ohms
R3061		22K ohms
R3063		33K ohms
R3064		33K ohms
R3065		33K ohms
R3066		33K ohms
R3067		33K ohms
R3068		33K ohms
R3069		33K ohms
R3070		33K ohms
R3071		39K ohms
R3072		100K ohms
R3073		2.2K ohms
R3076		33K ohms
R3077		33K ohms
R3078		2.2K ohms
R3079		1K ohms
R3080		100K ohms
R3081		100K ohms
R3082		1K ohms
R3083		1K ohms
R3084		1K ohms
R3085		1K ohms
R3086		1K ohms
R3087		1K ohms
R3088		100K ohms
R3089		10K ohms
R3091		560 ohms
R3092		22K ohms
R3093		1K ohms
R3094		100K ohms
R3095		100K ohms
R3096		390K ohms
R3097		560K ohms

Schematic Location	Parts No.	Description
R3098		100K ohms
R3099		330K ohms
R3100		220 ohms
R3101		33K ohms
R3102		470 ohms
R3103		470 ohms
R3104		470 ohms
R3105		470 ohms
R3106		470 ohms
R3107		470 ohms
R3108		470 ohms
R3109		1K ohms
R3110		1K ohms
R3111		1K ohms
R3112		10K ohms
R3113		100K ohms
R3114		56K ohms
R3115		100K ohms
R3116		100K ohms
R3117		10K ohms
R3118		1K ohms
R3119		1K ohms
R3120		220K ohms

(3) VP-1 PCB. ELECTRICAL PARTS

Schematic Location	Parts No.	Description
		(VARIABLE RESISTORS)
VR1501	4-222V-62811	4.7K ohms
VR1502	4-222V-62809	2.2K ohms
VR1503	4-222V-62809	2.2K ohms
VR1504	4-222V-62807	1K ohms
VR1505	4-222V-62810	3.3K ohms
		(COIL TRANSFORMERS & COILS)
T1501	4-288V-10800	Step-up Trans.
T1502	4-288V-10800	Step-up Trans.
L1501	4-253V-89255	HF Choke, 0.56μH
L1502	4-253V-89255	HF Choke, 0.56μH
L1503	4-253V-85245	HF Choke, 1mH
L1504	4-253V-85826	HF Choke, 120μH
L1505	4-253V-88317	HF Choke, 2.2mH
L1506	4-253V-85245	HF Choke, 1mH
L1508	4-253V-88323	HF Choke, 6.8mH
L1509	4-253V-88323	HF Choke, 6.8mH
L1510	4-253V-85817	HF Choke, 22μH
L1511	4-253V-85817	HF Choke, 22μH
L1512	4-253V-85813	HF Choke, 10μH
L1513	4-253V-85816	HF Choke, 18μH
		(IC's & TRANSISTORS)
Q1501		IC, LA7007
Q1502		2SK152-1 or 2 or 3
Q1503		2SK152-1 or 2 or 3
Q1504		2SC536E or F
Q1505		2SC536E or F
Q1506		2SC536E or F
Q1507		2SC930E or F
Q1508		2SA838A or B or C
Q1509		2SA654Q or 2SA838B or C
Q1510		2SC1815Y
Q1511		2SC930E or F

Schematic Location	Parts No.	Description
		(DIODES)
D1501		1S1555 or 1S2473
D1502		1S1555 or 1S2473
D1503		1S1555 or 1S2473
D1504		1S1555 or 1S2473
D1505		1S1555 or 1S2473
D1507		1S1555 or 1S2473
D1509		1S1555 or 1S2473
D1510		1S1555 or 1S2473
D1511		1S1555 or 1S2473
D1512		1S1555 or 1S2473
D1513		1S1555 or 1S2473
		(CAPACITORS)
C1501		BL Ceramic, 0.022mfd (M), 25V
C1502		BL Ceramic, 0.022mfd (M), 25V
C1503		BL Ceramic, 0.047mfd (M), 25V
C1504		BL Ceramic, 0.01mfd (K), 25V
C1505		BL Ceramic, 0.022mfd (M), 25V
C1506		BL Ceramic, 0.022mfd (M), 25V
C1507		BL Ceramic, 0.022mfd (M), 25V
C1508		BL Ceramic, 0.047mfd (M), 25V
C1509		BL Ceramic, 0.01mfd (K), 25V
C1510		Tantalum, 10mfd (M), 16V
C1511		BL Ceramic, 0.022mfd (M), 25V
C1512		BL Ceramic, 0.022mfd (M), 25V
C1513		Ceramic, 330pF (J), 50V
C1514		Elect., 10mfd (M), 10V
C1515		BL Ceramic, 0.01mfd (K), 25V
C1516		Ceramic, 470pF (J), 50V
C1517		Ceramic, 470pF (J), 50V
C1518		Ceramic, 100pF (J), 50V
C1519		BL Ceramic, 0.0027mfd (K), 25V
C1520		BL Ceramic, 0.0047mfd (K), 25V
C1524		Ceramic, 56pF (J), 50V
C1525		Ceramic, 56pF (J), 50V
C1526		BL Ceramic, 0.0047mfd (K), 25V
C1527		BL Ceramic, 0.0047mfd (K), 25V
C1528		Elect., 10mfd (M), 10V
C1529		Elect., 10mfd (M), 10V
C1531		BL Ceramic, 0.01mfd (K), 25V
C1532		Ceramic, 100pF (J), 50V
C1533		BL Ceramic, 0.01mfd (K), 25V
C1534		BL Ceramic, 0.022mfd (M), 25V
C1535		Elect., 47mfd (M), 16V
C1536		Elect., 0.47mfd (M), 25V
C1537		Ceramic, 36pF (J), 50V
C1538		Ceramic, 18pF (J), 50V
		(RESISTORS)
R1501		3.3K ohms
R1502		390 ohms
R1503		10K ohms
R1504		620 ohms
R1505		390 ohms
R1506		10K ohms
R1507		3.3K ohms
R1508		390 ohms
R1509		620 ohms
R1510		390 ohms
R1511		10K ohms
R1512		5.6K ohms
R1513		100 ohms
R1514		620 ohms
R1516		5.6K ohms
R1517		4.7K ohms

Schematic Location	Parts No.	Description
R1518		2.2K ohms
R1519		390 ohms
R1520		22K ohms
R1521		Non Flammable, 8.2 ohms
R1524		1.2K ohms
R1525		560 ohms
R1526		1K ohms
R1527		1K ohms
R1528		1K ohms
R1529		1K ohms
R1530		2.2K ohms
R1531		2.2K ohms
R1532		10K ohms
R1534		Non Flammable, 8.2 ohms
R1535		220 ohms
R1536		1K ohms
R1537		1K ohms
R1538		3.3 ohms
R1539		470 ohms
R1542		Non Flammable, 8.2 ohms
R1543		16K ohms
R1544		4.7K ohms
R1545		56K ohms
R1546		10K ohms
R1547		1K ohms
R1548		680 ohms
R1549		390 ohms
R1550		82K ohms
R1551		10K ohms
R1552		1K ohms
R1553		7.5 ohms
R1554		620 ohms
R1555		620 ohms
R1556		82 ohms
R1557		39 ohms
R1558		100 ohms
R1559		10K ohms
R1561		33K ohms

(4) SY-2 PCB. ELECTRICAL PARTS

Schematic Location	Parts No.	Description
	143-2-374T-01200	Panel, Operation LED's
		(SWITCHES)
SW3401	4-231V-64600	Push Switch, PLAY
SW3402	4-231V-64600	Push Switch, STOP
SW3403	4-231V-64600	Push Switch, REW
SW3404	4-231V-64600	Push Switch, F FWD
SW3405	4-231V-64600	Push Switch, PAUSE
SW3406	4-231V-64600	Push Switch, EJECT
SW3407	4-231V-64600	Push Switch, REC
SW3408	4-231V-64700	Push Switch, LOCK
SW3409	4-231V-64700	Push Switch, AUD DUB
		(DIODES)
D3401		LED, AR2432B (Red ... DEW)
D3402		LED, PR5532K (Red ... REC)
D3403		LED, PR5532K (Red ... REW)
D3404		LED, PR5532K (Red ... PLAY)
D3405		LED, PR5532K (Red ... F FWD)

Schematic Location	Parts No.	Description
D3406		LED, PR5532K (Red ... PAUSE)
D3407		LED, AR2432B (Red ... AUD DUB)

(5) MC-1 PCB. ELECTRICAL PARTS

Schematic Location	Parts No.	Description
Q3501		Transistor, 2SC536E or F
C3501		Elect., Capacitor (Super Small), 33mfd, 16V
C3502		Elect., Capacitor (Super Small), 10mfd, 16V
		(RESISTORS)
R3501		330K ohms
R3502		100K ohms
R3503		1K ohms
R3504		10K ohms
R3505		100 ohms
R3506	4-221V-10700	Magnetic Sensor, DM101A
or	4-221V-11600	Magnetic Sensor, DM106

(6) SV-1 PCB. ELECTRICAL PARTS

Schematic Location	Parts No.	Description
		(VARIABLE RESISTORS)
VR4001	4-222V-61710	50K ohms
VR4002	4-222V-61710	50K ohms
VR4003	4-222V-61710	50K ohms
VR4004	4-222V-61710	50K ohms
VR4005	4-222V-63118	100K ohms
VR4006	4-222V-63118	100K ohms
VR4007	4-222V-63118	100K ohms
VR4008	4-222V-63116	47K ohms
VR4009	4-222V-63116	47K ohms
VR4010	4-222V-63116	47K ohms
		(IC's & TRANSISTORS)
Q4001		IC, CX186
Q4002		IC, CX143A
Q4003		IC, TC4016BP or TC4066BP or LC4066B
Q4004		IC, TC4016BP or TC4066BP or LC4066B
Q4005		2SD400F or 2SD863F
Q4006		2SA933Q or R or S
Q4007		2SC536F or 2SC1815GR or 2SC2603F
Q4008		2SC536F or 2SC1815GR or 2SC2603F
Q4009		2SC536F or 2SC1815GR or 2SC2603F
Q4010		2SC536F or 2SC1815GR or 2SC2603F
Q4011		2SC536F or 2SC1815GR or 2SC2603F

Schematic Location	Parts No.	Description
Q4012		2SA933Q or R or S
Q4013		2SA933Q or R or S
Q4014		2SC536F or 2SC1815GR or 2SC2603F
Q4015		2SC536F or 2SC1815GR or 2SC2603F
Q4016		2SC536F or 2SC1815GR or 2SC2603F
		(DIODES)
D4001		Zener, GZA12X
D4002		DS442 or 1S1555
D4003		DS442 or 1S1555
D4004		DS442 or 1S1555
D4005		DS442 or 1S1555
D4066		DS442 or 1S1555
D4007		DS442 or 1S1555
D4008		DS442 or 1S1555
D4009		DS442 or 1S1555
		(CAPACITORS)
C4001		Elect., 33mfd (M), 16V
C4002		Mylar, 0.068mfd (J), 50V
C4003		Elect., 10mfd (M), 16V
C4004		Mylar, 0.018mfd (J), 50V
C4005		Mylar, 0.018mfd (J), 50V
C4006		Tantalum, 0.22mfd (K), 35V
C4007		Mylar, 0.0033mfd (J), 50V
C4008		Aluminium, 0.47mfd (K), 25V
C4009		Mylar, 0.047mfd (J), 50V
C4010		NP. Elect., 2.2mfd (M), 25V
C4011		Aluminium, 0.33mfd (K), 25V
C4012		Mylar, 0.022mfd (J), 50V
C4013		Elect., 33mfd (M), 16V
C4015		Elect., 47mfd (M), 16V
C4016		TF., 0.39mfd (K), 50V
C4017		Aluminium, 0.47mfd (K), 25V
C4018		Elect., 1mfd (M), 50V
C4019		NP. Elect., 2.2mfd (M), 25V
C4020		Elect., 47mfd (M), 16V
C4021		Mylar, 0.047mfd (J), 50V
C4022		Aluminium, 0.47mfd (K), 25V
C4023		Mylar, 0.1mfd (J), 50V
C4024		BL Ceramic, 0.0047mfd (M), 25V
C4025		Polypro., 0.082mfd (J), 100V
C4026		Elect., 2.2mfd (M), 50V
C4027		Aluminium, 0.22mfd (K), 25V
C4028		Ceramic, 0.001mfd (J), 50V
C4029		Mylar, 0.056mfd (J), 50V
C4030		Mylar, 0.047mfd (J), 50V
C4031		Mylar, 0.056mfd (J), 50V
C4032		Mylar, 0.027mfd (J), 50V
C4032		Mylar, 0.027mfd (J), 50V
C4033		Polypro., 0.01mfd (J), 100V
C4034		Polypro., 0.082mfd (J), 100V
C4035		Mylar, 0.012mfd (J), 50V
C4036		BL Ceramic, 0.0047mfd (M), 25V
C4037		BL Ceramic, 0.022mfd (N), 25V
C4038		BL Ceramic, 0.022mfd (N), 25V
C4039		BL Ceramic, 0.0047mfd (M), 25V
C4040		Aluminium, 0.47mfd (K), 25V
C4041		Elect., 22mfd (M), 16V
C4042		Aluminium, 0.47mfd (K), 25V
C4043		Mylar, 0.047mfd (J), 50V
C4044		NP. Elect., 2.2mfd (M), 25V
C4045		Mylar, 0.047mfd (J), 50V

Schematic Location	Parts No.	Description
C4046		Elect., 220mfd (M), 16V
C4047		BL Ceramic, 0.022mfd (N), 25V
C4048		Ceramic, 0.001mfd (J), 50V
		(RESISTORS)
R4001		220 ohms
R4002		33K ohms
R4003		33K ohms
R4004		33K ohms
R4005		1K ohms
R4006		5.6K ohms
R4007		33K ohms
R4008		6.8 ohms
R4009		6.8K ohms
R4010		390K ohms
R4011		4.7M ohms
R4012		56K ohms
R4013		1K ohms
R4014		1.8K ohms
R4015		100K ohms
R4016		100K ohms
R4017		10K ohms
R4018		1K ohms
R4019		82K ohms
R4020		15K ohms
R4021		3.3K ohms
R4022		100K ohms
R4023		10K ohms
R4024		1K ohms
R4025		2.2K ohms
R4026		18K ohms
R4027		68K ohms
R4028		1K ohms
R4029		180K ohms
R4030		47K ohms
R4031		560 ohms
R4032		4.7K ohms
R4033		8.2K ohms
R4034		120K ohms
R4035		47K ohms
R4036		33K ohms
R4037		Metal Glaze, 220K ohms, ±1%
R4038		Metal Glaze, 56K ohms, ±1%
R4039		Metal Glaze, 56K ohms, ±1%
R4040		Metal Glaze, 56K ohms, ±1%
R4041		1K ohms
R4042		22K ohms
R4043		1K ohms
R4044		18K ohms
R4045		39K ohms
R4046		6.8K ohms
R4047		6.8K ohms
R4048		33K ohms
R4049		120K ohms
R4050		47K ohms
R4051		47K ohms
R4052		47K ohms
R4053		33K ohms
R4054		47K ohms
R4055		47K ohms
R4056		33K ohms
R4057		10K ohms
R4058		100K ohms
R4059		1K ohms
R4060		1K ohms
R4061		10K ohms

Schematic Location	Parts No.	Description
R4062		1K ohms
R4063		10K ohms
R4064		10K ohms
R4065		100K ohms
R4066		10K ohms
R4067		5.6K ohms
R4068		22K ohms
R4069		4.7K ohms
R4070		33K ohms
R4071		2.2K ohms
R4072		22K ohms
R4073		68K ohms
R4074		2.2K ohms
R4075		5.6K ohms
R4076		33K ohms
R4077		18K ohms
R4078		2.2K ohms
R4079		10K ohms
R4080		390K ohms
R4081		10K ohms
R4082		5.1M ohms
R4083		15K ohms
R4084		1K ohms
R4085		470 ohms
R4086		Metal Glaze, 10K ohms, ±1%
R4087		1K ohms
R4088		470 ohms
R4089		Metal Glaze, 10K ohms, ±1%
R4090		1K ohms
R4091		470 ohms
R4092		Metal Glaze, 27K ohms, ±1%
R4094		10K ohms
R4095		33K ohms
R4096		10K ohms
R4097		47K ohms
R4098		47K ohms
R4099		10K ohms
R4100		1K ohms

(7) SV-4 PCB. ELECTRICAL PARTS

Schematic Location	Parts No.	Description
X4501	4-225V-17700	Crystal, 31.250K Hz
		(IC's & TRANSISTORS)
Q4501		IC, LB1274 or TD62006P
Q4502		IC, TC4069μBP or LC4009μB
Q4503		IC, MSM5565-01PS
Q4504		IC, NJM2904D or μPC358C
Q4505		IC, TC4520BP
Q4506		2SA933Q or R or S
Q4507		2SA933Q or R or S
Q4508		2SC536F or 2SC1815GR or 2SC2603F
Q4509		2SC536F or 2SC1815GR or 2SC2603F
Q4510		2SC536F or 2SC1815GR or 2SC2603F
Q4511		2SC536F or 2SC1815GR or 2SC2603F
Q4512		2SC536F or 2SC1815GR or 2SC2603F
Q4513		2SA933Q or R or S
Q4514		2SC536F or 2SC1815GR or 2SC2603F
Q4515		2SC2458 GR
Q4516		2SC536F or 2SC1815GR or 2SC2603F
Q4517		2SC536F or 2SC1815GR or 2SC2603F
Q4518		2SC536F or 2SC1815GR or 2SC2603F
Q4519		2SC536F or 2SC1815GR or 2SC2603F
Q4520		2SC536F or 2SC1815GR or 2SC2603F
Q4521		2SC536F or 2SC1815GR or 2SC2603F
Q4522		2SC536F or 2SC1815GR or 2SC2603F
Q4523		2SC536F or 2SC1815GR or 2SC2603F
Q4524		2SC536F or 2SC1815GR or 2SC2603F
		(DIODES)
D4501		DS442 or 1S1555
D4502		DS442 or 1S1555
D4503		DS442 or 1S1555
D4504		DS442 or 1S1555
D4505		DS442 or 1S1555
D4506		DS442 or 1S1555
D4507		DS442 or 1S1555
D4508		DS442 or 1S1555
D4509		DS442 or 1S1555
D4510		DS442 or 1S1555
D4511		Zener, GZA10X or XZ100
D4512		DS442 or 1S1555
D4513		DS442 or 1S1555
D4514		DS442 or 1S1555
D4515		DS442 or 1S1555
D4516		DS442 or 1S1555
D4517		DS442 or 1S1555
D4518		DS442 or 1S1555
D4519		DS442 or 1S1555
D4520		DS442 or 1S1555
D4521		DS442 or 1S1555
D4522		DS442 or 1S1555
D4523		DS442 or 1S1555
D4524		DS442 or 1S1555
D4525		DS442 or 1S1555
D4526		DS442 or 1S1555
D4527		DS442 or 1S1555
D4528		DS442 or 1S1555
D4529		DS442 or 1S1555
D4530		DS442 or 1S1555
D4531		DS442 or 1S1555
D4532		DS442 or 1S1555

Schematic Location	Parts No.	Description
		(CAPACITORS)
C4501		BL Ceramic, 0.01mfd (M), 25V
C4502		BL Ceramic, 0.01mfd (M), 25V
C4503		Elect., 1mfd (M), 50V
C4504		Ceramic, 56pF (J), 50V
C4505		Ceramic, 150pF (J), 50V
C4506		Ceramic, 51pF (J), 50V
C4507		Elect., 47mfd (M), 16V
C4508		BL Ceramic, 0.01mfd (M), 25V
C4509		BL Ceramic, 0.0022mfd (M), 25V
C4510		Elect., 33mfd (M), 16V
C4511		Elect., 22mfd (M), 16V
C4512		Elect., 47mfd (M), 16V
C4513		BL Ceramic, 0.022mfd (N), 16V
C4514		Elect., 1mfd (M), 50V
C4515		Elect., 47mfd (M), 16V
Q4516		NP. Elect., 1mfd (M), 25V
C4517		Elect., 4.7mfd (M), 25V
C4518		Elect., 3.3mfd (M), 50V
C4519		Elect., 4.7mfd (M), 25V
C4520		Elect., 2.2mfd (M), 50V
C4521		Aluminium, 0.47mfd (M), 25V
C4522		Elect., 100mfd (M), 10V
C4523		NP. Elect., 1mfd (M), 25V
C4524		Elect., 100mfd (M), 16V
C4525		Elect., 47mfd (M), 16V
		(RESISTORS)
R4501		10K ohms
R4502		10K ohms
R4503		10K ohms
R4504		10K ohms
R4505		10K ohms
R4506		10K ohms
R4507		100K ohms
R4508		10K ohms
R4509		10K ohms
R4510		10K ohms
R4511		2.7K ohms
R4512		1.2K ohms
R4513		33K ohms
R4514		33K ohms
R4515		100 ohms
R4516		2.2K ohms
R4517		56K ohms
R4518		22K ohms
R4519		4.7K ohms
R4520		4.7K ohms
R4521		33K ohms
R4522		5.6K ohms
R4523		5.6K ohms
R4524		68K ohms
R4525		68K ohms
R4526		47K ohms
R4527		100K ohms
R4528		2.2K ohms
R4529		1K ohms
R4530		47K ohms
R4531		22K ohms
R4532		47K ohms
R4533		22K ohms
R4534		510K ohms
R4535		150K ohms
R4536		100K ohms
R4537		10K ohms
R4538		1K ohms
R4539		100K ohms
R4540		100K ohms
R4541		10K ohms
R4542		1K ohms
R4543		4.7K ohms
R4544		1K ohms
R4545		15K ohms
R4546		1.8K ohms
R4547		220 ohms
R4548		39K ohms
R4549		3.3K ohms
R4550		4.7K ohms
R4551		330 ohms
R4552		6.8K ohms
R4553		6.8K ohms
R4554		4.7K ohms
R4555		5.6K ohms
R4556		1.5M ohms
R4557		10K ohms
R4558		10K ohms
R4559		100K ohms
R4560		10K ohms
R4561		470K ohms
R4562		220K ohms
R4563		220K ohms
R4564		10K ohms
R4565		100K ohms
R4566		220K ohms
R4567		220K ohms
R4568		10K ohms
R4569		1K ohms
R4570		1K ohms
R4571		1K ohms
R4572		100K ohms
R4573		100K ohms
R4574		4.7K ohms
R4575		1K ohms
R4576		1K ohms
R4577		1K ohms
R4578		10K ohms
R4579		22K ohms
R4580		2.2K ohms
R4581		10K ohms
R4582		120K ohms
R4583		10K ohms
R4584		47K ohms
R4585		10K ohms
R4586		100K ohms
R4587		10K ohms
R4588		47K ohms
R4589		68K ohms
R4590		68K ohms
R4591		10K ohms
R4592		2.2K ohms
R4593		56K ohms
R4594		6.8K ohms
R4595		10K ohms
R4596		1K ohms
R4597		1K ohms
R4598		1K ohms
R4599		56K ohms
R4600		560K ohms
R4601		47K ohms
R4602		1K ohms
R4603		10K ohms

(8) PW-1 PCB. ELECTRICAL PARTS

Schematic Location	Parts No.	Description
F5001	4-234V-15419	Fuse, 2A
or	4-234V-12510	Fuse, 2A
	143-2-383T-03100	Fuse Holder (2 used)
		(VARIABLE RESISTORS)
VR5001	4-222V-62502	1K ohms
or	4-222V-62604	1K ohms
VR5002	4-222V-62807	1K ohms
VR5003	4-222V-62807	1K ohms
		(COILS)
L5001	4-253V-96700	HF Choke, 300μH
L5002	4-253V-96801	HF Choke, 200μH
L5003	4-471V-10200	Beads Core
L5005	4-253V-88622	HF Choke, 56μH
		(IC's & TRANSISTORS)
Q5001		IC, TL494C
Q5002		IC, TL494C
Q5003		2SA768Y or G
Q5004		2SA1104W
Q5005		2SA608E or F or G
Q5006		2SC1983O
Q5007		2SC536E or F or G
Q5008		2SC536E or F or G
Q5009		2SD863D or E or F
Q5010		2SB698D or E or F
Q5011		2SC536E or F or G
		(DIODES)
D5001		DS135C or D
D5002	4-202V-12900	M4B51
or	4-202V-13000	DBB50C
D5003		CTU22R or S5KC20R
D5004		1S2473 or DS442
D5005		Zener, BZ110
D5006		1S2473 or DS442
D5007		Zener, BZ150
D5008		1S2473 or DS442
D5009		Zener, XZ057 or GZA5.6Y
D5010		Zener, BZ182
D5011		Zener, XZ127 or GZA13X
D5012		Zener, XZ084 or GZA8.2Z
		(CAPACITORS)
C5001		Elect., 100mfd (M), 100V
C5002		Ceramic, 0.01mfd (K), 50V
C5003		Ceramic, 0.01mfd (K), 50V
C5004		Ceramic, 0.01mfd (K), 50V
C5005		Ceramic, 0.01mfd (K), 50V
C5006	4-223V-19600	Elect., 4700mfd, 35V
or	4-223V-19610	Elect., 4700mfd, 35V
or	4-223V-19620	Elect., 4700mfd, 35V
C5007		Elect., 47mfd (M), 35V
C5008		BL Ceramic, 0.01mfd (K), 50V
C5009		Ceramic, 0.01mfd (K), 50V
C5010		Elect., 1000mfd (M), 16V
C5011		Elect., 470mfd (M), 16V
C5012		BL Ceramic, 0.01mfd (K), 50V
C5013		Elect., 2.2mfd (M), 50V
C5014		Elect., 1000mfd (M), 16V
C5015		Mylar, 1000pF (J), 50V
C5016		Elect., 470mfd (M), 16V
C5017		Elect., 100mfd (M), 35V
C5018		Elect., 0.1mfd (M), 50V
C5019		Elect., 10mfd (M), 16V
C5020		Elect., 100mfd (M), 25V
C5021		Ceramic, 0.01mfd (K), 50V
C5022		Ceramic, 0.001mfd (K), 50V
		(RESISTORS)
R5001		Metal Glaze, 1K ohms, 1W
R5002		Metal Glaze (Fusible), 1/4W
R5003		47 ohms
R5004		Metal Glaze, 470 ohms, 3W
R5005		Metal Glaze, 3.3 ohms, 1W
R5006		33K ohms
R5007		820 ohms
R5008		15K ohms
R5009		Metal Glaze, 0.22 ohms, 1/2W
R5010		10 ohms
R5011		5.6K ohms
R5012		1.8K ohms
R5013		2.4K ohms
R5014		2.4K ohms
R5015		100K ohms
R5016		75K ohms
R5017		47 ohms
R5018		Metal Glaze, 270 ohms, 3W
R5019		100K ohms
R5020		10K ohms
R5021		51K ohms
R5022		470 ohms
R5023		15K ohms
R5024		Metal Glaze, 0.22 ohms, 1/2W
R5025		Metal Glaze, 0.22 ohms, 1/2W
R5026		12K ohms
R5027		2.7K ohms
R5028		4.7K ohms
R5029		4.7K ohms
R5030		Non Flammable, 1 ohms
R5031		3.9K ohms
R5032		510 ohms
R5033		3.3K ohms
R5034		1.8K ohms
R5035		1K ohms
R5036		680 ohms
R5037		10K ohms
R5038		Metal Glaze, 3.9 ohms, 1W
R5039		Metal Glaze, 470 ohms, 1/2W
R5040		1.5K ohms
R5041		12K ohms
R5042		8.2K ohms
R5043		10 ohms

(9) PW-2 PCB. ELECTRICAL PARTS

Schematic Location	Parts No.	Description
F5201	⚠ 4-243V-15414	Fuse, 630mA
	143-2-383T-03100	Fuse Holder (2 used)
	143-2-135T-16300	Fuse Cover
L5201	⚠ 4-252V-11600	LF Choke Coil
or	⚠ 4-252V-11800	LF Choke Coil
C5201	⚠ 4-223V-18900	Elect., Capacitor, 0.1mfd, 250V
or	⚠ 4-223V-20200	Elect., Capacitor, 0.1mfd, 250V

(10) TN-1 PCB. ELECTRICAL PARTS

Schematic Location	Parts No.	Description
		(VARIABLE RESISTOR)
VR6001	4-222V-65812	1M ohms
VR6002	4-222V-65805	5K ohms
VR6003	4-222V-65806	10K ohms
		(FILTERS)
*F6001	4-953V-04000	Filter, Used 143-9-0600-07300 PCB.
*or	4-953V-04200	Filter, Used 143-9-0600-07300 PCB.
*F6001	4-953V-06600	Filter, Used 143-9-0600-07301 PCB.
F6002	4-953V-00100	Filter
F6003	4-953V-00300	Filter
F6004	4-953V-04100	Filter
		(COIL TRANSFORMERS & COILS)
T6001	4-256V-24700	IF Trans.
T6002	4-256V-24800	IF Trans.
L6001	4-253V-98600	HF Choke, 0.28μH
*L6002	4-253V-98400	HF Choke, 0.82μH, Used 143-9-0600-07300 PCB.
*L6002	4-253V-98500	HF Choke, 1.5μH, Used 143-9-0600-07301 PCB.
*L6003	4-253V-95100	HF Choke, 1.3μH, Used 143-9-0600-07300 PCB.
*L6003	4-253V-98800	HF Choke, 2.7μH, Used 143-9-0600-07301 PCB.
L6005	4-253V-85914	HF Choke, 12μH
*L6006	4-253V-85914	HF Choke, 12μH, Used 143-9-0600-07300 PCB.
*L6006	4-253V-85912	HF Choke, 8.2μH, Used 143-9-0600-07301 PCB.
L6007	4-253V-85915	HF Choke, 15μH
L6008	4-253V-85912	HF Choke, 8.2μH
		(IC's & TRANSISTORS)
Q6001		2SC2216
Q6002		2SC536E or F
Q6003		2SC536E or F
Q6004		2SD545E or F
Q6005		IC, TA7607AP
Q6006		IC, LA1365
		(CAPACITORS)
C6001		Ceramic, 0.01mfd (P), 50V
C6002		Ceramic, 0.01mfd (P), 50V
C6003		Elect., 47mfd (M), 25V
C6005		Elect., 0.47mfd (M), 50V
C6006		Ceramic, 0.01mfd (P), 50V
C6008		Ceramic, 0.01mfd (P), 50V
C6009		Ceramic, 1000pF (K), 50V
C6010		Ceramic, 2pF (±0.5pF), 50V, CK
C6011		Ceramic, 47pF (J), 50V, CH
C6012		Ceramic, 82pF (J), 50V, CH
C6013		Ceramic, 2pF (±0.5pF), 50V, CK
C6014		Ceramic, 12pF (J), 50V, CH
C6015		Ceramic, 0.01mfd (P), 50V
C6016		Elect., 1mfd (M), 25V
C6017		Ceramic, 1000pF (K), 50V
C6018		Ceramic, 0.01mfd (P), 50V
C6019		Elect., 1mfd (M), 25V
C6020		Ceramic, 47pF (J), 50V
C6021		Ceramic, 47pF (J), 50V
C6022		Elect., 2.2mfd (M), 25V
C6023		Ceramic, 0.01mfd (P), 50V
C6024		Elect., 100mfd (M), 25V
C6025		Mylar, 6800pF (K), 50V
C6026		Ceramic, 68pF (J), 50V, RH
C6027		Elect., 4.7mfd (M), 25V
C6028		Ceramic, 12pF (±0.25pF), 50V, CH
C6029		Elect., 470mfd (M), 10V
C6030		Ceramic, 0.01mfd (P), 50V

Schematic Location	Parts No.	Description
		(RESISTORS)
R6001		270 ohms
R6002		5.6K ohms
R6003		390 ohms
R6004		390 ohms
R6005		1K ohms
R6006		47 ohms
R6007		820K ohms
*R6008		820 ohms, Used 143-9-0600-07300 PCB.
*R6008		1.8K ohms, Used 143-9-0600-07301 PCB.
R6009		5.6K ohms
R6010		1K ohms
R6011		1K ohms
R6012		220 ohms
R6013		1K ohms
R6014		1K ohms
R6015		100K ohms
R6016		150K ohms
R6017		2.7K ohms
R6018		1K ohms
R6019		220 ohms
R6020		2.2K ohms
R6021		1K ohms
R6022		150 ohms
R6024		100 ohms
R6025		560 ohms
R6026		Non Flammable, 33 ohms
R6027		680 ohms
R6028		1K ohms
R6029		1.2K ohms
R6030		12K ohms
R6031		1.5K ohms

(11) TN-2 PCB. ELECTRICAL PARTS

Schematic Location	Parts No.	Description
VR6201	4-222V-14300	Channel Select V.R.
SW6201	4-231V-19000	AFT Switch
Q6201		Transistor, 2SC536KE
		(DIODE)
D6215		DS442X or 1S2472 or 1SS132
D6216		DS442X or 1S2472 or 1SS132
D6217		DS442X or 1S2472 or 1SS132
D6218		DS442X or 1S2473 or 1SS132
D6219		DS442X or 1S2473 or 1SS132
D6220		DS442X or 1S2473 or 1SS132
D6221		DS442X or 1S2473 or 1SS132
D6222		DS442X or 1S2473 or 1SS132
D6229		μPC574J
		(CAPACITORS)
C6303		Elect., 22mfd (M), 50V
C6204		Ceramic, 0.01mfd (Z), 50V
C6205		Elect., 100mfd (M), 16V
C6206		Elect., 100mfd (M), 16V
		(RESISTORS)
R6201		470K ohms
R6202		39K ohms
R6203		1K ohms

(12) TN-3 PCB. ELECTRICAL PARTS

Schematic Location	Parts No.	Description
	143-2-374T-01000	Bracket, Channel lights
SW6301	4-231V-63500	Channel Select Switch
SW6302	4-231V-64000	POWER ON/TIMER/ STAND BY Switch
		(DIODES)
D6301		LED, PR5704S ... Channel light
D6302		LED, PR5704S ... Channel light
D6303		LED, PR5704S ... Channel light
D6304		LED, PR5704S ... Channel light
D6305		LED, PR5704S ... Channel light
D6306		LED, PR5704S ... Channel light
D6307		LED, PR5704S ... Channel light
D6308		LED, PR5704S ... Channel light
D6309		LED, PR5704S ... Channel light
D6310		LED, PR5704S ... Channel light
		(RESISTORS)
R6301		1K ohms
R6302		1K ohms
R6303		1K ohms
R6306		33K ohms
R6307		560 ohms

(13) TM-1 PCB. ELECTRICAL PARTS

Schematic Location	Parts No.	Description
	4-202V-12700	Digital Display
CF7001	4-953V-03400	Ceramic Filter
SW7001	4-231V-64500	MEMORY Switch
SW7002	4-231V-64400	CLOCK SET Switch
SW7003	4-231V-64400	REC START Switch
SW7004	4-231V-64400	REC STOP Switch
SW7005	4-231V-64400	REC DAY Switch
SW7006	4-231V-64400	DAY/HOUR Switch
SW7007	4-231V-64400	MIN Switch
		(IC's & TRANSISTORS)
Q7001		IC, µPD552C-083
Q7002		IC, µPC393C
Q7003		2SB632E or F
Q7005		2SC536E or F
Q7006		2SC536E or F
Q7007		2SA608E or F
		(DIODE)
D7001		DS442 or 1S2473 or 1S1555
D7002		DS442 or 1S2473 or 1S1555
D7003		DS442 or 1S2473 or 1S1555
D7004		DS442 or 1S2473 or 1S1555
D7005		DS442 or 1S2473 or 1S1555
D7006		DS442 or 1S2473 or 1S1555
D7007		DS442 or 1S2473 or 1S1555
D7008		Zener, RD6.8EB2
D7009		Zener, RD11EB2
D7010		DS442 or 1S2473 or 1S1555
		(CAPACITORS)
C7001		Ceramic, 0.01mfd (M), 25V
C7002		Ceramic, 0.01mfd (M), 25V
C7003		Ceramic, 0.022mfd (M), 25V
C7004		Ceramic, 0.022mfd (M), 25V
C7005		Mylar, 0.082mfd (M), 50V
C7006		Elect., 100mfd (M), 25V
C7007		Elect., 47mfd (M), 25V
C7008		Ceramic, 470pF (K), 25V
C7009		Ceramic, 120pF (K), 25V
C7010		Ceramic, 0.022mfd (M), 25V
C7011		Elect., 33mfd (K), 16V
		(RESISTORS)
R7001		2.2K ohms
R7002		5.6K ohms
R7003		27K ohms
R7004		27K ohms
R7005		220K ohms
R7006		220K ohms
R7007		27K ohms
R7008		220K ohms
R7009		2.2K ohms
R7010		2.2K ohms
R7011		10K ohms
R7012		27K ohms
R7013		10K ohms
R7014		1K ohms
R7015		1M ohms
R7016		10K ohms
R7017		10K ohms
R7018		10K ohms
R7019		10K ohms
R7020		18K ohms
R7021		5.6K ohms
R7022		33K ohms
R7023		100K ohms
R7024		100K ohms
R7025		10K ohms
R7026	4-956V-10408	R-pack, 100K ohms x 8
R7027	4-956V-33305	R-pack, 33K ohms x 5
R7028	4-956V-33303	R-pack, 33K ohms x 3
R7029		10K ohms
R7030		10K ohms
R7031		33K ohms
R7032		10K ohms

(14) TB-2 PCB. ELECTRICAL PARTS

Schematic Location	Parts No.	Description
S2601	4-235V-29400	Remote Connector
S2602	4-235V-30600	MIC Jack
R2601		Carbon Resistor, 47K ohms
R2602		Carbon Resistor, 390 ohms

MEMO

SANYO ELECTRIC TRADING CO., LTD.
33, Hiyoshi-cho 2-chome, Moriguchi-shi,
Osaka-fu, 570 Japan

May/'82/2500 HA Printed in Japan